SUPER®

SUPER® X7SBU

USER'S MANUAL

Revision 1.0b

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Preface

About This Manual

This manual is written for system integrators, PC technician and knowledgeable PC users. It provides information for the installation and use of the SUPERO X7SBU motherboard. The X7SBU supports single Intel® Xeon® 3000 sequence/Core™ 2 Extreme/Core™ 2 Quad/Core™ 2 Duo processor with a system bus speed of 1600 MHz/1333 MHz/1066 MHz and up to 8 Gb Unbuffered DDR3 Non-ECC up to 1333 MHz in 4 DIMMs or DDR3 Non-ECC 1600 MHz up to 4GB in 2 DIMMs memory. The Intel® Xeon® 3000 sequence/Core™ 2 Extreme/Core™ 2 Quad/Core™ 2 Duo processor supports the 775-Land Grid Array Package that interfaces with the motherboard via an LGA775 socket. With support of Dual-Core™ Technology, Intel® Hyper-Threading (HT) Technology, Wide Dynamic Execution, FSB Dynamic Bus Inversion (DBI), Advanced Digital Media Boost, Smart Memory Access, and Thermal Management 2 (TM2), the X7SBU delivers unparalleled system performance and great power efficiency in a slim package. Please refer to the motherboard specifications pages on our web site (http://www.supermicro.com/Products/) for updates on supported processors. This product is intended to be professionally installed and serviced by a technician.

Manual Organization

Chapter 1 describes the features, specifications and performance of the motherboard and provides detailed information about the chipset.

Chapter 2 provides hardware installation instructions. Read this chapter when installing the processor, memory modules and other hardware components into the system. If you encounter any problems, see **Chapter 3**, which describes troubleshooting procedures for video, memory and system setup stored in the CMOS.

Chapter 4 includes an introduction to the BIOS and provides detailed information on running the CMOS Setup utility.

Appendix A provides BIOS Error Beep Codes.

Appendix B lists the Windows OS Installation Instructions.

Appendix C lists Other Software Program Installation Instructions.

Conventions Used in the Manual:

Special attention should be given to the following symbols for proper installation and to prevent damage done to the components or injury to yourself:

Warning: Important information given to ensure proper system installation, to prevent bodily injury or damage to the components.

Note: Additional Information given to differentiate various models or to ensure correct system setup.

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Chapter 1

Introduction

1-1 Overview

Checklist

Congratulations on purchasing your computer motherboard from an acknowledged leader in the industry. Supermicro boards are designed with the utmost attention to detail to provide you with the highest standards in quality and performance.

Please check that the following items have all been included with your motherboard. If anything listed here is damaged or missing, contact your retailer.

The following items are included in the retail box:

One (1) Supermicro Mainboard

One (1) floppy drive ribbon cable (CBL-0022L)

Six (6) SATA cables (CBL-044L)

One (1) Supermicro CD containing drivers and utilities

One (1) User's/BIOS Manual

One (1) I/O shield (CSE-PT07L)

1-2 Contacting Supermicro

Headquarters

Address:	Super Micro Computer, Inc.
	980 Rock Ave.
	San Jose, CA 95131 U.S.A.
Tel:	+1 (408) 503-8000
Fax:	+1 (408) 503-8008
Email:	marketing@supermicro.com (General Information)
	support@supermicro.com (Technical Support)
Web Site:	www.supermicro.com

Europe

Address:	Super Micro Computer B.V.
	Het Sterrenbeeld 28, 5215 ML
	's-Hertogenbosch, The Netherlands
Tel:	+31 (0) 73-6400390
Fax:	+31 (0) 73-6416525
Email:	sales@supermicro.nl (General Information)
	support@supermicro.nl (Technical Support)
	rma@supermicro.nl (Customer Support)

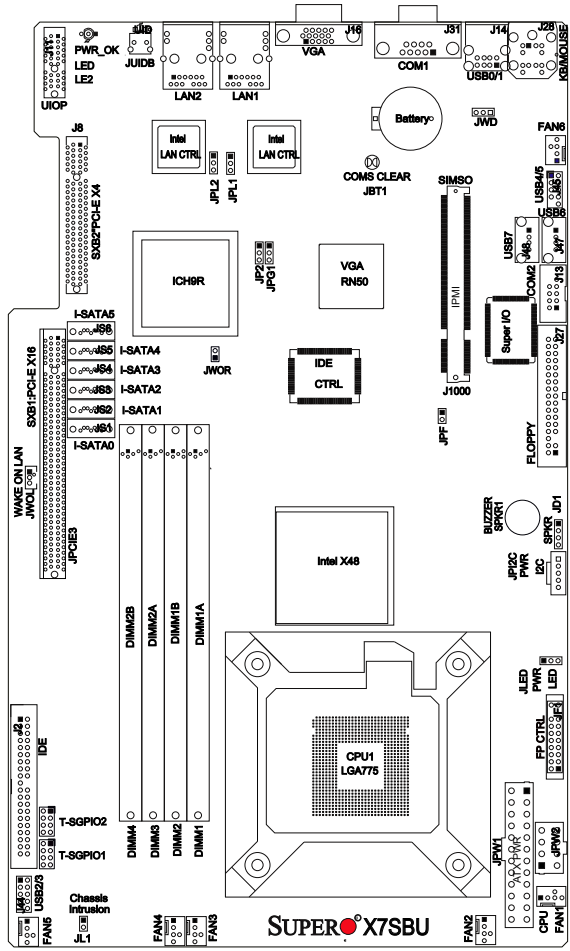
Asia-Pacific

Address:	Super Micro Computer, Inc.
	4F, No. 232-1, Liancheng Rd.
	Chung-Ho 235, Taipei County
	Taiwan, R.O.C.
Tel:	+886-(2) 8226-3990
Fax:	+886-(2) 8226-3991
Web Site:	www.supermicro.com.tw
Technical Support:	
Email:	support@supermicro.com.tw
Tel:	886-2-8228- 1366, ext. 132 or 139

X7SBU Image

All pictures and drawings shown in this manual were based upon the latest PCB Revision available at the time of publishing of the manual. The motherboard you have received may or may not look exactly the same as those in this manual.

1-3 Motherboard Layout



Important Notes to the User

- Jumpers not indicated are for testing only.
- See Chapter 2 for detailed information on jumpers, I/O ports and JF1 front panel connections.
- "▪" indicates the location of "Pin 1."

When installing a UIO riser card that contains two PCI-E slots (such as Supermicro's RSC-R1UU-2E8 and RSC-R1UU-UE8), please note that the lower slot supports both PCI-E 2.0 and PCI-E 1.1; however, the upper slot only supports PCI-E 1.1

X7SBU Quick Reference

Jumpers	Description	Default Setting
JBT1	CMOS Clear	See Chapter 2
JPF	Power Force On	OPEN (NORMAL)
JPG1	Onboard VGA Enable	Pins 1-2 (Enabled)
JPL1/JPL2	Gigabit LAN 1/2 Enable	Pins 1-2 (Enabled)
JP2	IDE Enable	Pins 1-2 (Enabled)
JWD	Watch Dog Timer Out	Pins 1-2 (Reset)

Connectors	Description
COM1, COM2	COM1 Port and COM2 Header
Fans 1-6	Fan 1: CPU Fan, Fan 2-6: Chassis Fan Headers
JD1	On Board Speaker Connector
JAR	Alarm Reset
JF1	FP Control Panel Header
JL1	Chassis Intrusion Header
JLAN1/JLAN2	Ethernet RJ45 (Gigabit LAN) Connectors
JLED	Header Key Power Indication
JPW1	ATX 24-pin Power Connector (Required)
JPW2	12V 8-pin Power Connector (Required)
JWOL	Wake-on-LAN Header
JWOR	Wake-on-Ring Header
KB/Mouse	PS/2 Keyboard/Mouse Connector
PCI-E x4	PCI-Express x8 (physical, x4 signal)
PCI-E x16	PCI-Express x16 slot (PCI-E x8 + x8)
PWR_SMB	Power SMBus (I^2C)
SATA 0-5	SATA Headers
SIMSO	SIMSO IPMI 2.0 Socket
SKPR1	Internal Buzzer
UIOP	Supermicro Proprietary Power Connector
T-SGPIO 1-2	Serial General Purpose Input Output Headers
USB 0/1	Back Panel Universal Serial Bus Ports
USB 2/3, USB 4/5	Front Panel Accessible USB Headers
USB 6/7	Type A USB Connectors
VGA	Onboard Video Graphics Connector

LED Indicator	Description
LE1	Onboard StandBy Power LED
LE2 (JUIDB)	UID (Universal Identification) Button-In LED Indicator
D64 (PWR_OK LED)	Power Ready LED Indicator

Motherboard Features

Processor

- Single Intel® Xeon® 3000 sequence/Core™ 2 Extreme/Core™ 2 Quad/Core™ 2 Duo processor with a system bus speed of 1600/1333/1066/800 MHz

Memory

- Supports up to 8GB/s of single or dual channel Unbuffered DDR3 Non-ECC up to 1333 MHz or Unbuffered DDR3 Non-ECC up to 4 GB 1600 MHz in up to 2 DIMM modules

Chipset

- Intel® X48 Express Chipset
- Intel® ICH9R

Expansion Slots

- One (1) Universal PCI-E x8 + x8 (x16) slot
- One (1) PCI-E x4 (x8) slot
- One (1) SIMSO IPMI
- One (1) UIO Riser card

Note: When installing a UIO riser card that contains two PCI-E slots (such as Supermicro's RSC-R1UU-2E8 and RSC-R1UU-UE8), please note that the lower slot supports both PCI-E 2.0 and PCI-E 1.1; however, the upper slot only supports PCI-E 1.1

BIOS

- 16 Mb Firmware Hub Phoenix BIOS
- DMI 2.3, PCI 2.2, ACPI 1.0/2.0 (S3 Optional), Plug and Play (PnP), SMBIOS 2.3

PC Health Monitoring

- Onboard voltage monitors for CPU cores, Memory Voltage, +1.8V, +3.3V, 3.3V Standby, +5V, +5V Standby, +12V, −12V, and VBAT
- CPU 4-phase-switching voltage regulator
- Chassis intrusion detection
- Platform Environment Control Interface (PECI) ready
- Status monitor for fan speed & System OH/Fan Fail LED/Control
- Pulse Width Modulation Fan Control & Low noise fan speed control
- Environmental temperature monitoring via BIOS
- Power-up mode control for recovery from AC power loss
- SuperDoctor III, NMI

- Suspend to RAM (STR) (S3 Optional)
- BIOS support for USB keyboard
- Main switch override mechanism

ACPI Features

- Slow blinking LED for suspend state indicator
- BIOS support for USB keyboard
- Main switch override mechanism
- Internal/external modem ring-on

Onboard I/O

- Intel® ICH9R SATA Controller, 6 connectors for 6 devices with support of RAID functions 0, 1, 5 and 10 (RAID 5: supported by Intel's RAID Controller in the Windows OS environment only)
- 1 floppy port interface (up to 2.88 MB)
- 1 Fast UART 16550 compatible serial port and 1 header
- Intel® 82573V and 82573L Gigabit Ethernet Controllers
- IDE Connector could connect up to 2 IDE devices controlled by an ITE 8213 chip
- PS/2 mouse and PS/2 keyboard ports
- Up to 8 USB (2 rear ports, 2 headers, and 2 on-board connector)
- On board VGA Connector
- SIMSO IPMI Slot
- Winbond 83627HG (Super I/O), Hardware Monitor: W83793H/W
- ES1000 (16 MB) Graphic Controller supports one VGA connector

Temperature

- Monitoring CPU, chassis environment
- CPU Thermal Trip support
- Thermal Monitor 2 (TM2) (available if supported by the CPU)

Other

- Wake-on-LAN (WOL)
- Onboard +5V Stanby warning LED Indicator (D64)
- External modem ring-on

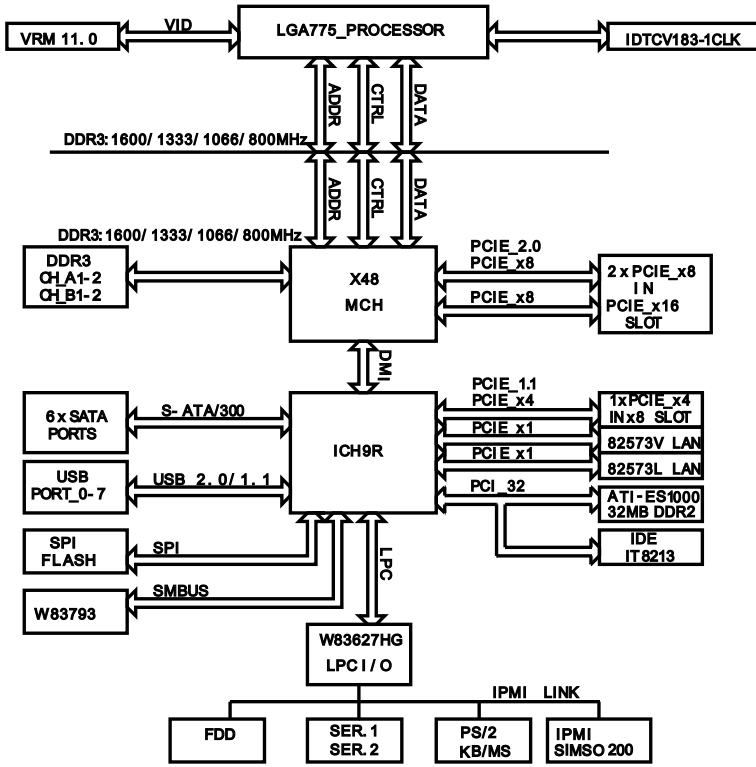
CD Utilities

- Drivers and software for Intel® 3200 chipset utilities

Dimensions

- Proprietary form factor, 8" x 13" (203.2 x 330.1 cm)

Block Diagram



X7SBU Block Diagram

This is a general block diagram and may not exactly represent the features on your motherboard. See the previous pages for the actual specifications of your motherboard.

1-4 Chipset Overview

The Intel® X48 Express chipset, designed for use with an Intel® Xeon ®3000 sequence/Core™ 2 Extreme/Core™ 2 Quad/Core™ 2 Duo processor in the LGA 775 Land Grid Array Package, is comprised of two primary components: the Memory Controller Hub (MCH) and the I/O Controller Hub (ICH9R). The X7SBU provides the performance and feature-set required for the mainstream server market.

Note: The Intel® X48 chipset does not support add-in graphics cards in the PCI-E interface by the Memory Controller Hub

Memory Controller Hub (X48)

The function of the MCH is to manage the data flow between four interfaces: the CPU interface, the DDR3 System Memory interface, the PCI Express interface, and the Direct Media Interface (DMI). The MCH is optimized for the Xeon® 3000 sequence/Core™ 2 Extreme/Core™ 2 Quad/Core™ 2 Duo processor in the LGA775 Land Grid Array package.and supports up to 8 Gb Unbuffered DDR3 Non-ECC up to 1333 MHz in 4 DIMMs or DDR3 Non-ECC 1600 MHz up to 4GB in 2 DIMMs memory

I/O Controller (ICH9R)

The I/O Controller (ICH9R) provides the data buffering and interface arbitration required for the system to operate efficiently. It also provides the bandwidth needed for the system to maintain its peak performance. The Direct Media Interface (DMI) provides the connection between the MCH and the ICH9R. The ICH9R supports two PCI-Express devices, six Serial ATA ports, and up to seven USB 2.0 ports/headers. In addition, the ICH9R offers the Intel Matrix Storage Technology which provides various RAID options for data protection and rapid data access. It also supports the next generation of client management through the use of PROActive technology in conjunction with Intel's next generation Gigabit Ethernet controller.

1-5 Special Features

Recovery from AC Power Loss

BIOS provides a setting for you to determine how the system will respond when AC power is lost and then restored to the system. You can choose for the system to remain powered off (in which case you must hit the power switch to turn it back on) or for it to automatically return to a power- on state. See the Power Lost Control setting in the Advanced section to change this setting.

1-6 PC Health Monitoring

This section describes the PC health monitoring features of the X7SBU. All have an onboard System Hardware Monitor chip that supports PC health monitoring.

An onboard voltage monitor will scan the Onboard Voltage Monitors for the CPU Cores, Memory Voltage, +1.8V, +3.3V, +5V, +5V Standby, +12V, –12V and Vbatt.(via SuperO Doctor) continuously. Once a voltage becomes unstable, a warning is given or an error message is sent to the screen. Users can adjust the voltage thresholds to define the sensitivity of the voltage monitor.

Fan Status Monitor with Firmware Control

The PC health monitor can check the RPM status of the cooling fans. The onboard CPU and chassis fans are controlled by Thermal Management via BIOS (under Hardware Monitoring in the Advanced Setting).

Environmental Temperature Control

The thermal control sensor monitors the CPU temperature in real time and will turn on the thermal control fan whenever the CPU temperature exceeds a user-defined threshold. The overheat circuitry runs independently from the CPU. Once it detects that the CPU temperature is too high, it will automatically turn on the thermal fan control to prevent any overheat damage to the CPU. The onboard chassis thermal circuitry can monitor the overall system temperature and alert users when the chassis temperature is too high.

With the Intel® ICH9R built in, the X7SBU supports I/O Virtualization Technology (VT-d) that enables multiple operating systems and applications to run in independent partitions. Each partition uses its own subset of host physical memory, and behaves like a virtual machine (VM), providing isolation and protection across

multiple partitions. This feature is available when a processor that supports I/O Virtualization Technology is installed on the motherboard.

CPU Overheat LED and Control

This feature is available when the user enables the CPU overheat warning function in the BIOS. This allows the user to define an overheat temperature. When this temperature is exceeded, both the overheat fan and the warning LED are triggered.

System Resource Alert

This feature is available when used with Supero Doctor III in the Windows OS environment or used with Supero Doctor II in Linux. Supero Doctor is used to notify the user of certain system events. For example, if the system is running low on virtual memory and there is insufficient hard drive space for saving the data, you can be alerted of the potential problem. You can also configure Supero Doctor to provide you with warnings when the system temperature goes beyond a predefined range.

1-7 ACPI Features

ACPI stands for Advanced Configuration and Power Interface. The ACPI specification defines a flexible and abstract hardware interface that provides a standard way to integrate power management features throughout a PC system, including its hardware, operating system and application software. This enables the system to automatically turn on and off peripherals such as CD-ROMs, network cards, hard disk drives and printers. This also includes consumer devices connected to the PC such as VCRs, TVs, telephones and stereos.

In addition to enabling operating system-directed power management, ACPI provides a generic system event mechanism for Plug and Play and an operating system-independent interface for configuration control. ACPI leverages the Plug and Play BIOS data structures while providing a processor architecture-independent implementation that is compatible with Windows 2000, Windows XP and Windows 2003 Server Operating Systems.

Slow Blinking LED for Suspend-State Indicator

When the CPU goes into a suspend state, the chassis power LED will start blinking to indicate that the CPU is in suspend mode. When the user presses any key, the CPU will wake-up and the LED will automatically stop blinking and remain on.

1-8 Super I/O

The disk drive adapter functions of the Super I/O chip include a data separator, write pre-compensation circuitry, decode logic, data rate selection, a clock generator, drive interface control logic and interrupt and DMA logic. The Super I/O supports two 360 K, 720 K, 1.2 M, 1.44 M or 2.88 M disk drives and data transfer rates of 250 Kb/s, 500 Kb/s or 1 Mb/s.

It also provides two high-speed, 16550 compatible serial communication ports (UARTs). Each UART includes a 16-byte send/receive FIFO, a programmable baud rate generator, complete modem control capability and a processor interrupt system. Both UARTs provide legacy speed with baud rate of up to 115.2 Kbps as well as an advanced speed with baud rates of 250 K, 500 K, or 1 Mb/s, which support higher speed modems.

The Super I/O provides functions that comply with the ACPI (Advanced Configuration and Power Interface), which includes support of legacy and ACPI power management through a SMI or SCI function pin. It also features auto power management to reduce power consumption.

Chapter 2

Installation

2-1 Static-Sensitive Devices

Electrostatic-Discharge (ESD) can damage electronic components. To prevent damage to your system board, it is important to handle it very carefully. The following measures are generally sufficient to protect your equipment from ESD.

Precautions

- Use a grounded wrist strap designed to prevent static discharge.
- Touch a grounded metal object before removing the board from the antistatic bag.
- Handle the board by its edges only; do not touch its components, peripheral chips, memory modules or gold contacts.
- When handling chips or modules, avoid touching their pins.
- Put the motherboard and peripherals back into their antistatic bags when not in use.
- For grounding purposes, make sure your computer chassis provides excellent conductivity between the power supply, the case, the mounting fasteners and the motherboard.
- Use only the correct type of onboard CMOS battery as specified by the manufacturer. Do not install the onboard battery upside down to avoid possible explosion.

Unpacking

The motherboard is shipped in antistatic packaging to avoid static damage. When unpacking the board, make sure the person handling it is static protected.

2-2 Motherboard Installation

Note: Be sure to mount the motherboard into the chassis before you install the CPU onto the motherboard.

All motherboards have standard mounting holes to fit different types of chassis. Make sure that the locations of all the mounting holes for both motherboard and chassis match. Make sure that the metal standoffs click in or are screwed in tightly. Then use a screwdriver to secure the motherboard onto the motherboard tray..

Please note that some components are very close to the mounting holes. Please take precautionary measures to prevent damage to these components when installing the motherboard to the chassis

Caution: To avoid damaging the motherboard and its components, please do not use a force greater than 8 lb/inch on each mounting screw during motherboard installation.

2-3 Processor and Heatsink Installation

Warning: When handling the processor package, avoid placing direct pressure on the label area of the fan.

Notes:

1. Always connect the power cord last and always remove it before adding, removing or changing any hardware components. Make sure that you install the processor into the CPU LGA 775 socket before you install the CPU heatsink.

2. The Intel® LGA 775 Processor package contains the CPU fan and heatsink assembly. If you buy a CPU separately, make sure that you use only Intel-certified multi-directional heatsink and fan.

3. Make sure to install the motherboard into the chassis before you install the CPU heatsink and fan.

4. When purchasing an LGA 775 Processor or when receiving a motherboard with an LGA 775 Processor pre-installed, make sure that the CPU plastic cap is in place and none of the CPU pins are bent; otherwise, contact the retailer immediately.

5. Refer to the MB Features Section for more details on CPU support.

Installing the LGA 775 Processor

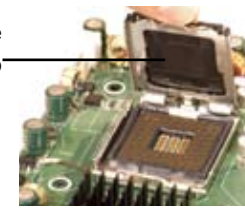
Load Lever

PnP Cap on top of the Load Plate

1. Press the load lever to release the load plate, which covers the CPU socket, from its locking position.

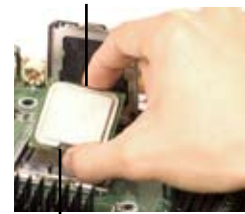
2. Gently lift the load lever to open the load plate.

Load Plate (with PnP Cap attached)



3. Use your thumb and your index finger to hold the CPU at the top center edge and the bottom center edge of the CPU.

Top Center Edge



Bottom Center Edge

4. Align CPU Pin1 (the CPU corner marked with a triangle) against the socket corner that is marked with a triangle cutout.

5. Align the CPU key that is the semi-circle cutout below a golden dot against the socket key, the Notch on the same side of the triangle cutout on the socket.

6. Once aligned, carefully lower the CPU straight down to the socket. (Do not drop the CPU on the socket. Do not move the CPU horizontally or vertically. Do not rub the CPU against the surface or against any pins of the socket to avoid damage to the CPU or the socket.)

7. With the CPU inside the socket, inspect the four corners of the CPU to make sure that the CPU is properly installed.

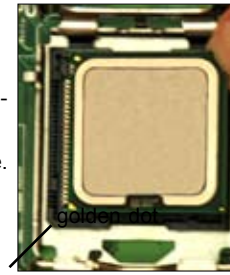
8. Use your thumb to gently push the load lever down to the lever lock.

9. If the CPU is properly installed into the socket, the plastic PnP cap will be automatically released from the load plate when the load lever is pushed in the lever lock. Remove the PnP cap from the motherboard.

Warning: Please save the plastic PnP cap. The motherboard must be shipped with the PnP cap properly installed to protect the CPU socket pins. Shipment without the PnP cap properly installed will cause damage to the socket pins.

Socket Key (Socket Notch)

CPU Key (semi-circle cutout) below the circle.



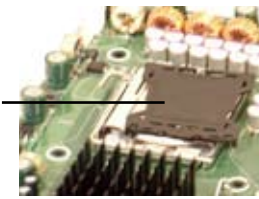
Corner with a triangle cutout

CPU Pin1

Load Lever

CPU in the CPU socket

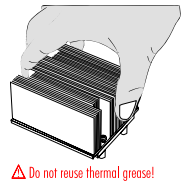
Plastic cap is released from the load plate if CPU properly installed.



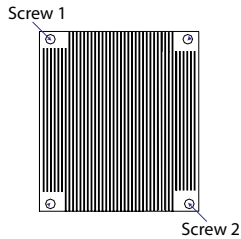
Installing the Heatsink

1. Do not apply any thermal grease to the heatsink or the CPU die, the required amount has already been applied.

2. Place the heatsink on top of the CPU so that the four mounting holes are aligned with those on the retention mechanism.



3. Screw in two diagonal screws (eg. the #1 and the #2 screws) until just snug (do not fully tighten the screws, which may damage the CPU).

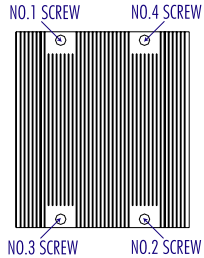


4. Finish the installation by fully tightening all four screws.

Removing the Heatsink

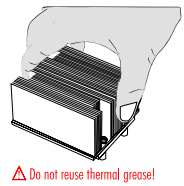
Warning: We do not recommend that the CPU or the heatsink be removed. However, if you do need to uninstall the heatsink, please follow these instructions below to prevent damage to the CPU or the CPU socket.

1. Unscrew and remove the heatsink screws from in the sequence as show in the picture on the right.



2. Hold and gently wriggle the heatsink to loosen it from the CPU. (Do not use excessive force when loosening the heatsink!)

3. Once the heatsink is loosened, remove it from the CPU socket.



4. Clean the surfaces of the CPU and the heatsink to remove the old thermal grease. Reapply the proper amount of thermal grease on the surface before re-installing the CPU and the heatsink.

2-4 Installing DIMMs

Note: Check the Supermicro web site for recommended memory modules.

Warning: Exercise extreme care when installing or removing DIMM modules to prevent any possible damage. Also note that the memory is interleaved to improve performance (see step 1).

Memory Support

This motherboard supports up to 8 GB Unbuffered DDR3 Non-ECC up to 1333 MHz in 4 DIMMs or DDR3 Non-ECC 1600 MHz upto 4GB in up to 2 DIMMs memory (See notes 2 and 3). Populating DIMM 1A, DIMM 2A, and/or DIMM 1B, DIMM 2B with memory modules of the same size and of the same type will result in dual channel, two-way interleaved memory which is faster than the single channel, non-interleaved memory.

Notes:

1. Due to the OS limitations, some operating systems may not show more than 4 GB of memory.

2. Both Unbuffered ECC and Non-ECC memory modules will boot up. However, ECC functionality is not supported on this board.

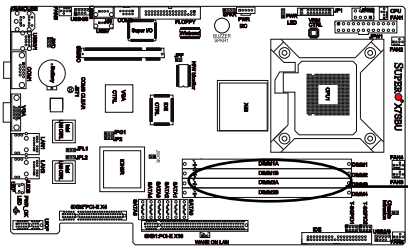
3. X7SBU supports DDR3 up to 1600 MHz;. You can only install up to two 1600 MHz modules with one module in DIMM1B slot or DIMM2B slot or with two modules in both DIMM 1B and DIMM 2B slots

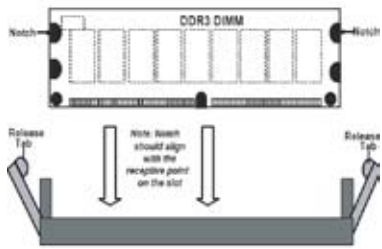
4. Due to memory allocation to system devices, memory remaining available for operational use will be reduced when 4 GB of RAM is used. The reduction in memory availability is disproportional.

5. For Microsoft Windows users: Microsoft implemented a design change in Windows XP with Service Pack 2 (SP2) and Windows Vista. This change is specific to the Physical Address Extension (PAE) mode behavior which improves driver compatibility. For more information, please read the following article at Microsoft's Knowledge Base website at: http://support.microsoft.com/kb/888137.

Possible System Memory Allocation & Availability		
System Device	Size	Physical Memory Remaining (-Available) (4 GB Total System Memory)
Firmware Hub flash memory (System BIOS)	1 MB	3.99
Local APIC	4 KB	3.99
Area Reserved for the chipset	2 MB	3.99
I/O APIC (4 Kbytes)	4 KB	3.99
PCI Enumeration Area 1	256 MB	3.76
PCI Express (256 MB)	256 MB	3.51
PCI Enumeration Area 2 (if needed) -Aligned on 256-MB boundary-	512 MB	3.01
VGA Memory	16 MB	2.85
TSEG	1 MB	2.84
Memory available to OS and other applications		2.84

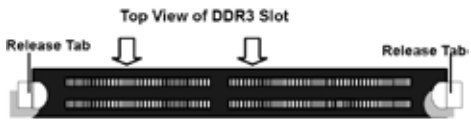
Installing and Removing DIMMs





To Install: Insert module vertically and press down until it snaps into place. Pay attention to the alignment notch at the bottom.

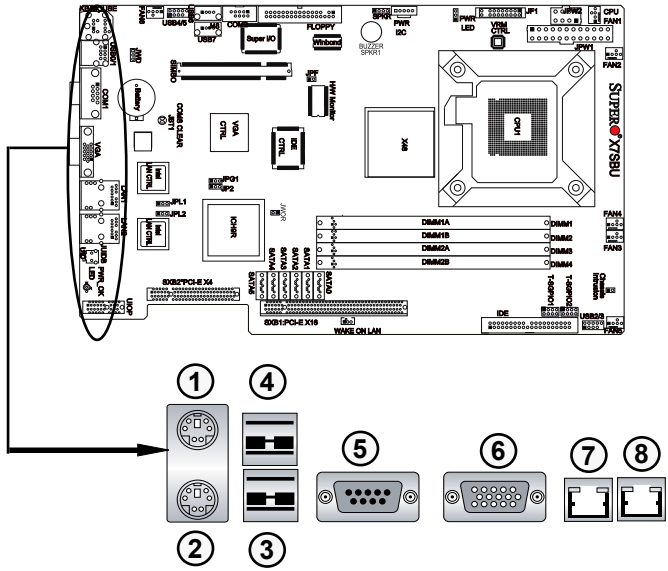
To Remove:
Use your thumbs to gently push the release tabs near both ends of the module. This should release it from the slot.



2-5 Control Panel Connectors/IO Ports

The I/O ports are color coded in conformance with the PC 99 specification. See Figure 2-3 below for the colors and locations of the various I/O ports.

1. Back Panel Connectors/IO Ports



Back Panel I/O Port Locations and Definitions

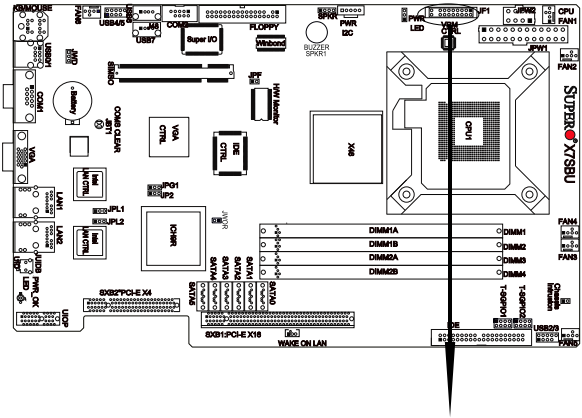
Back Panel Connectors

1. PS/2 Mouse (Green)
2. Keyboard (Purple)
3. Back Panel USB Port 0
4. Back Panel USB Port 1
5. COM Port 1 (Turquoise)
6. VGA Port (Blue)
7. Gigabit LAN 1
8. Gigabit LAN 2

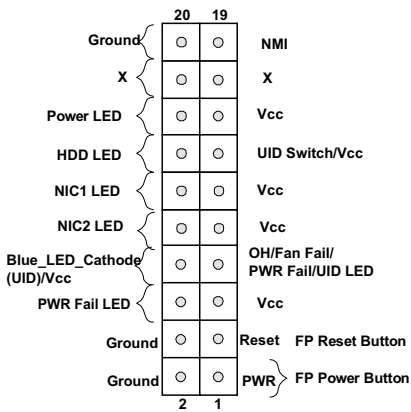
(See Section 2-5 for details.)

2. Front Control Panel

JF1 contains header pins for various buttons and indicators that are normally located on a control panel at the front of the chassis. See Figure 2-4 for the descriptions of the various control panel buttons and LED indicators. Refer to the following section for descriptions and pin definitions.



Header Pins



3. Front Control Panel Pin Definitions

NMI Button

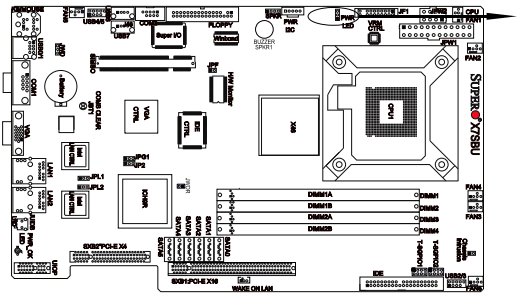
The non-maskable interrupt button header is located on pins 19 and 20 of JF1. Refer to the table on the right for pin definitions.

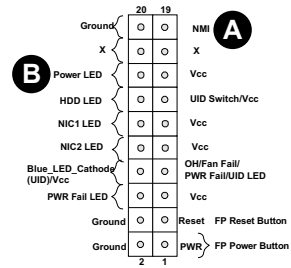
NMI Button Pin Definitions (JF1)	
Pin#	Definition
19	Control
20	Ground

Power LED

The Power LED connection is located on pins 15 and 16 of JF1. Refer to the table on the right for pin definitions.

Power LED Pin Definitions (JF1)	
Pin#	Definition
15	+5V
16	Ground





NIC1/NIC2 LED Indicators

The NIC (Network Interface Controller) LED connection for GLAN 1 is located on pins 11 and 12 of JF1 and the LED connection for GLAN 2 is on Pins 9 and 10. Attach the NIC LED cables to display network activity. Refer to the table on the right for pin definitions.

GLAN 1 LED Pin Definitions (JF1)	
Pin#	Definition
11	LED_Anode+
12	NIC1 LED Signal

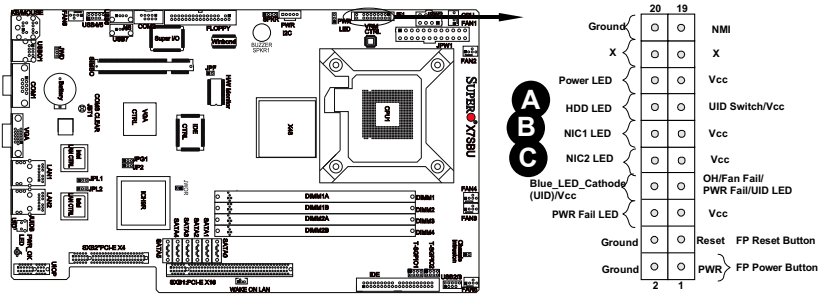
GLAN 2 LED Pin Definitions (JF1)	
Pin#	Definition
9	LED_Anode+
10	NIC2 LED Signal

HDD LED

The HDD LED connection is located on pins 13 and 14 of JF1. Attach the hard drive LED cable here to display disk activity (for any hard drives on the system, including SAS, Serial ATA and IDE, if available). See the table on the right for pin definitions.

HDD LED Pin Definitions (JF1)	
Pin#	Definition
13	+3.3 standbyV
14	HD Active

A. HDD LED
B. NIC1 LED
C. NIC2 LED



Overheat/Fan Fail LED (OH)

Connect an LED to the OH/Fan. Fail connection on pins 7 and 8 of JF1 to provide advanced warning of chassis overheating or fan failure. Refer to the table on the right for pin definitions.

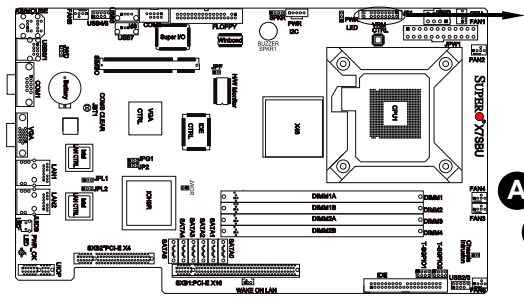
OH/Fan Fail Indicator Status	
State	Definition
Off	Normal
On	Overheat
Flash-ing	Fan Fail

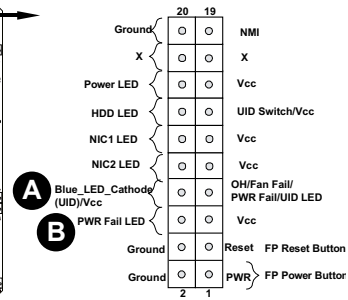
Power Fail LED

The Power Fail LED connection is located on pins 5 and 6 of JF1. Refer to the table on the right for pin definitions.

PWR Fail LED Pin Definitions (JF1)	
Pin#	Definition
5	Vcc
6	PWR Fail

A. OH/Fan Fail LED
B. PWR Supply Fail





Reset Button

The Reset Button connection is located on pins 3 and 4 of JF1. Attach it to the hardware reset switch on the computer case. Refer to the table on the right for pin definitions.

Reset Button Pin Definitions (JF1)	
Pin#	Definition
3	Reset
4	Ground

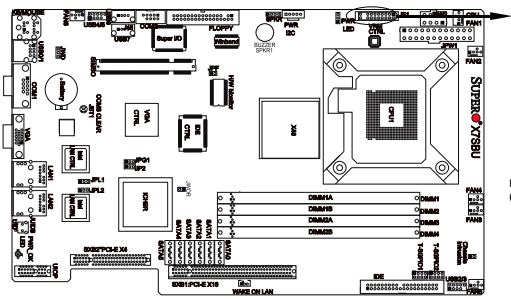
Power Button

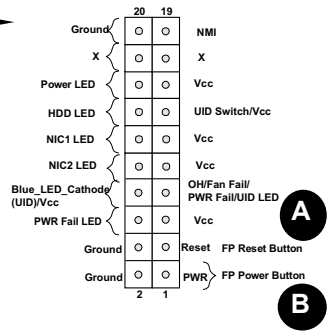
The Power Button connection is located on pins 1 and 2 of JF1. Momentarily contacting both pins will power on/off the system. This button can also be configured to function as a suspend button (with a setting in the BIOS - see Chapter 4). To turn off the power when set to suspend mode, press the button for at least 4 seconds. Refer to the table on the right for pin definitions.

Power Button Pin Definitions (JF1)	
Pin#	Definition
1	Signal
2	+3V Standby

A. Reset Button

B. PWR Button





2-6 Connecting Cables

24-pin Proprietary Power Connectors

The main power supply connector (JPW1) on the X7SBU meets the SSI (Superset ATX) specification. You can only use a 24-pin power supply cable on the motherboard. Make sure that the orientation of the connector is correct. You must also use the 8-pin (JPW2) processor power connector for adequate power supply to the system (See below). See the table on the right for pin definitions.

24-pin Proprietary Connector Pin Definitions (JPW1)

Pin#	Definition	Pin #	Definition
13	+3.3V	1	+3.3V
14	-12V	2	+3.3V
15	COM	3	COM
16	PS_ON	4	+5V
17	COM	5	COM
18	COM	6	+5V
19	COM	7	COM
20	Res (NC)	8	PWR_OK
21	+5V	9	5VSB
22	+5V	10	+12V
23	+5V	11	+12V
24	COM	12	+3.3V

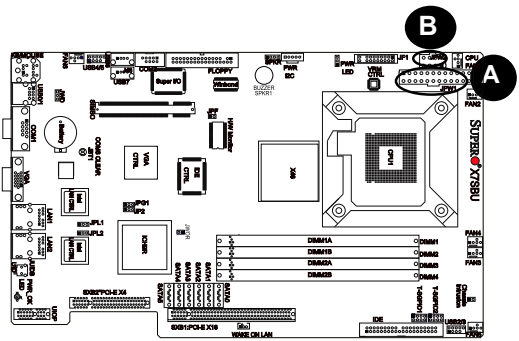
Processor Power Connector

Required Connection

In addition to the Primary ATX power connector (above), the 12V 8-pin CPU PWR connector at JPW2 must also be connected to your power supply. See the table on the right for pin definitions.

Processor Power Connector Pin Definitions (JPW2)

Pins	Definition
1 through 4	Ground
5 through 8	+12V



A. JPW1
B. JPW2

Universal Serial Bus (USB)

There are eight USB 2.0 (Universal Serial Bus) ports/headers on the motherboard. Two of them are Back Panel USB ports USB 0/1. Another four USB Headers: USB 2/3 and USB 4/5 can provide front access USB connections. FP USB 6/7 is a front panel USB connection. See the tables on the right for pin definitions.

Back Panel USB 0/1 Pin Definitions

Pin#	Definitions
1	+5V
2	PO-
3	PO+
4	Ground
5	N/A

Front Panel & Front Accessible USB Pin Definitions

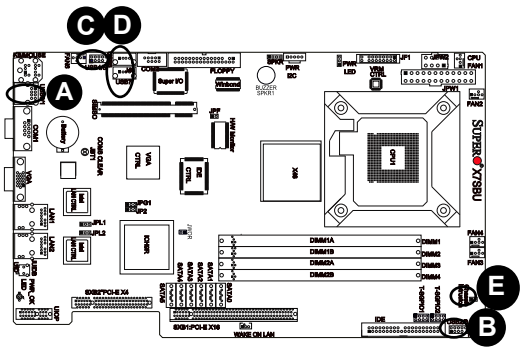
USB 2, USB 4, USB 6, USB7 Pin #	Definition	USB 3, USB 5 Pin #	Definition
1	+5V	1	+5V
2	PO-	2	PO-
3	PO+	3	PO+
4	Ground	4	Ground
5	No connection	5	Key

Chassis Intrusion

A Chassis Intrusion header is located at JL1 on the motherboard. Attach an appropriate cable from the chassis to inform you of a chassis intrusion when it is opened.

Chassis Intrusion Pin Definitions (JL1)

Pin#	Definition
1	Intrusion Input
2	Ground



A. Backpanel USB 0/1
B. Front Accessible USB 2/3
C. Front Accessible USB 4/5
D. Front Panel USB 6, USB 7
E. Chassis Intrusion

ATX PS/2 Keyboard and PS/2 Mouse Ports

The ATX PS/2 keyboard and the PS/2 mouse are located on the back panel. See the table on the right for pin definitions. (The mouse port is above the keyboard port. See the table on the right for pin definitions.)

PS/2 Keyboard and Mouse Port Pin Definitions

Pin#	Definition
1	Data
2	NC
3	Ground
4	VCC
5	Clock
6	NC

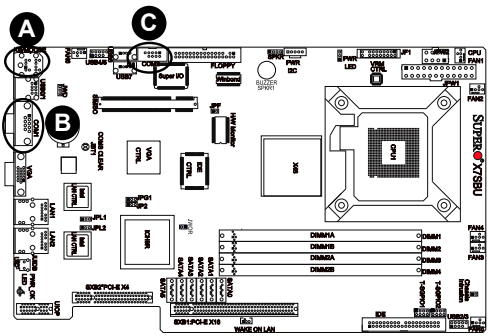
Serial Ports

COM1 (J31) is a connector located on the I/O backpanel, COM2 is a header located at J13. See the table on the right for pin definitions.

Serial Ports Pin Definitions (J31 and J13)

Pin #	Definition	Pin #	Definition
1	DCD	6	DSR
2	RXD	7	RTS
3	TXD	8	CTS
4	DTR	9	RI
5	Ground	10	NC

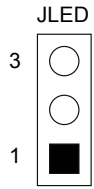
(Pin 10 is available on COM2 only. NC: No Connection.)



A. Keyboard/Mouse
B. COM1
C. COM2

Power LED (JLED)

This is a 3-pin connector that shows the system power status. It is a front panel LED



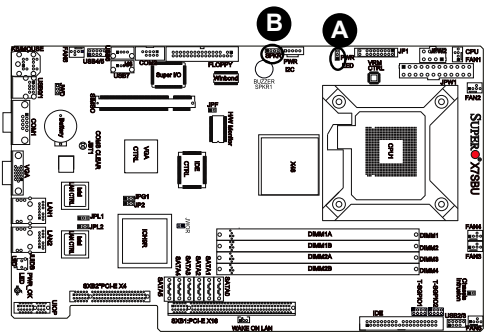
Power LED Pin Definitions	
Pin Setting	Definition
Pin 1	Vcc
Pin 2	NC (No Connection)
Pin 3	PWR_LED

External Speaker/Internal Buzzer

On the JD1 header, pins 1-4 are for an External Speaker and pins 3-4 are for the Internal Buzzer See the table on the right for speaker pin definitions.

Note: Connect a cable to pins 1-4 to user an external speaker. If you wish to use the onboard buzzer, you should close pins 3-4 with a cap.

Speaker Connector (JD1)	
Pin Setting	Definition
Pins 3-4	Internal Speaker
Pins 1-4	External Speaker



A. PWR LED

B. Speaker

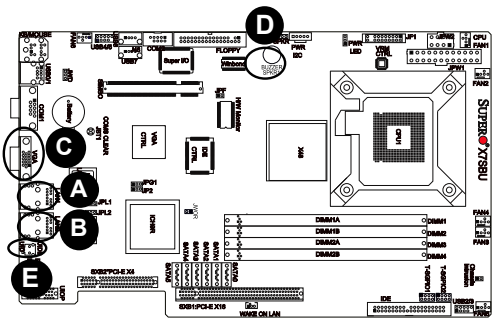
JLAN (Giga-bit Ethernet Ports)

Two Giga-bit Ethernet ports (JLAN1/ JLAN2) are located next to the VGA Connector on the IO backplane. These ports accept RJ45 type cables.

LAN1 LAN2

UID (Unit Identification Switch)

There is a UID switch (JUID) on the motherboard. It is located next to the LAN Port 2. This UID Indicator provides easy identification of a system unit that may be in need of service



A. JLAN1
B. JLAN2
C. VGA
D. SKPR1
E. UID

Fan Headers

The X7SBU has six fan headers (Fan1 to Fan6) including five chassis/system fan headers (Fan1 to Fan5) and one CPU Fan (CPU Fan6). All these fan headers support 4-pin fans. However, Pins 1-3 of the fan headers are backward compatible with the traditional 3-pin fans. See the table on the right for pin definitions. The onboard fan speeds are controlled by Thermal Management via BIOS Hardware Monitoring in the Advanced Setting.

4-pin Fan Header Pin Definitions (Fan1-6)

Pin#	Definition
1	Ground
2	+12V
3	Tachometer
4	PWR Modulation

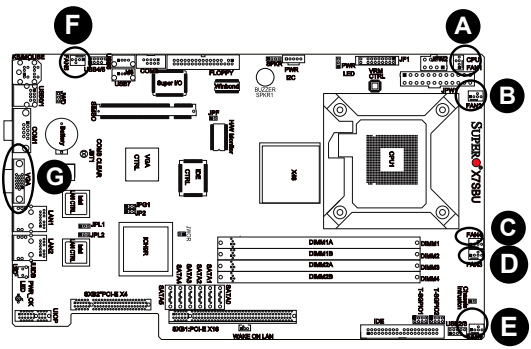
Notes:

1. The Default setting is Disabled.

2. Please use all 3-pin fans or all 4-pin fans on the motherboard. Please do not

VGA Connector

A VGA connector (J16) is located between COM1 and JLAN1 on the IO backplane. Refer to the board layout below for the location.



A. Fan 1 (CPU Fan)
B. Fan 2
C. Fan 3
D. Fan 4
E. Fan 5
F. Fan 6
G. VGA

Wake-On-Ring

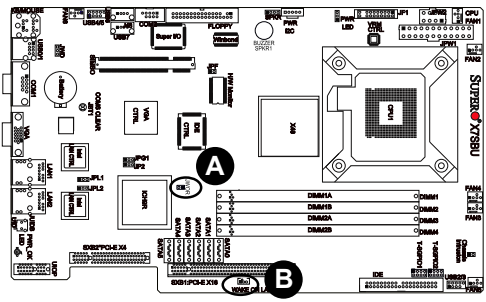
The Wake-On-Ring header is located at JWOR. This feature allows your computer to be awakened by an incoming call to the modem when the system is in the suspend state. See the table on the right for pin definitions. You must have a Wake-On-Ring card and a cable to use this feature.

Wake-On-Ring Pin Definitions (JWOR)	
Pin#	Definition
1	Ground
2	Wake-up

Wake-On-LAN

The Wake-On-LAN header is located at JWOL on the motherboard. See the table on the right for pin definitions. (You must also have a LAN card with a Wake-On-LAN connector and cable to use this feature.)

Wake-On-LAN Pin Definitions (JWOL)	
Pin#	Definition
1	+5V Standby
2	Ground
3	Wake-up



A. WOR
B. WOL

Power SMB (I² C) Connector

Power SMB (I² C) Connector (PW4) is used to monitor PWR supply, fan and system temperature. See the table on the right for pin definitions.

PWR SMB Pin Definitions

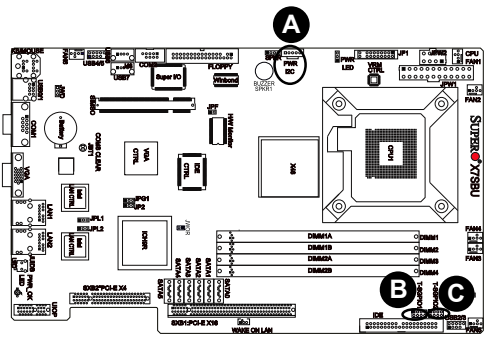
Pin#	Definition
1	Clock
2	Data
3	PWR Fail
4	Ground
5	+3.3V

SGPIO Headers

Two SGPIO (Serial General Purpose Input/Output) headers are located above the IDE on the motherboard. This header supports serial link interfaces for the onboard SATA connectors. See the table on the right for pin definitions. Refer to the board layout below for the location.

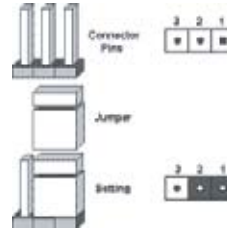
SGPIO Pin Definitions

Pin#	Definition	Pin	Definition
2	NC	1	NC
4	SATA_SB_ SDATAOUT0	3	GND
6	GND	5	SATA_SB_ SLOAD
8	ND	7	SATA_SB_ Clock



A. PWR SMB
B. SGPIO1
C. SGPIO2

2-7 Jumper Settings



Explanation of Jumpers

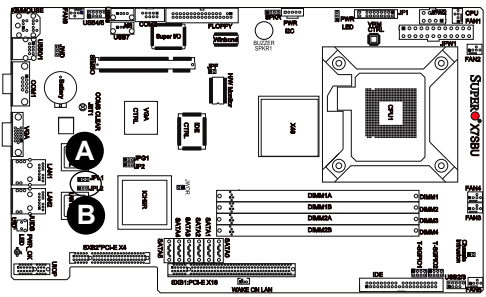
To modify the operation of the motherboard, jumpers can be used to choose between optional settings. Jumpers create shorts between two pins to change the function of the connector. Pin 1 is identified with a square solder pad on the printed circuit board. See the motherboard layout pages for jumper locations.

Notes: On two pin jumpers, "Closed" means the jumper is on and "Open" means the jumper is off the pins.

GLAN Enable/Disable

Both JPL1 and JPL2 enable or disable the GLAN Port on the motherboard. See the table on the right for jumper settings. The default setting is enabled.

JLAN Enable (JPL1, JPL2)	
Pin#	Definition
1-2	Enabled (default)
2-3	Disabled



A. JLAN Port1 Enable

B. JLAN Port 2 Enable

Clear CMOS

JBT1 is used to clear CMOS. Instead of pins, this "jumper" consists of contact pads to prevent the accidental clearing of CMOS. To clear CMOS, use a metal object such as a small screwdriver to touch both pads at the same time to short the connection. Always remove the AC power cord from the system before clearing CMOS.

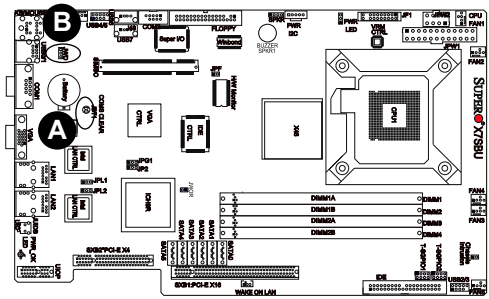
For an ATX power supply, you must completely shut down the system, remove the AC power cord and then close pins 1 and 2 to clear CMOS.

Watch Dog Enable/Disable

JWD controls the Watch Dog function. Watch Dog is a system monitor that can reboot the system when a software application hangs. Close pins 1-2 to reset the system if an application hangs. Close pins 2-3 to generate a non-maskable interrupt signal for the application that hangs. See the table on the right for jumper settings. Watch Dog must also be enabled in the BIOS.

Note: When this function is enabled, the user needs to write his/her own application software to disable the Watch Dog Timer.

Watch Dog Jumper Settings (JWD)	
Jumper Setting	Definition
Pins 1-2	Reset (*default)
Pins 2-3	NMI
Open	Disabled



A. Clear CMOS

B. Watch Dog Enable

VGA Enable/Disable

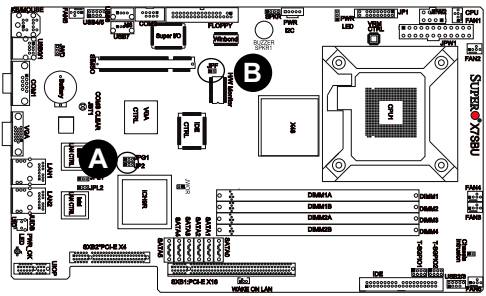
JPG1 enables or disables the VGA Connector on the motherboard. See the table on the right for jumper settings. The default setting is enabled.

VGA Enable (JPG1)	
Pin#	Definition
Pins 1-2	Enabled (*default)
Pins 2-3	Disabled

Force-Power-On Enable/Disable

Jumper JPF allows you to enable or disable the function of Force-Power-On. If enabled, the power will always stay on automatically. If this function is disabled, the user needs to press the power button to power on the system.

Power Force On Jumper Settings (JPF)	
Pin#	Definition
Off	Normal
On	Force On



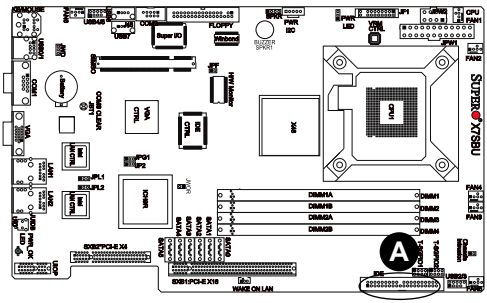
A. JPG1

B. PWR Force On

IDE Enable/Disable

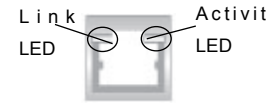
J2 enables or disables IDE on the X7SBU. See the table on the right for jumper settings. The default setting is enabled.

IDE Enable/Disable (J2)	
Pin#	Definition
1-2	Enabled (*default)
2-3	Disabled



A. IDE

2-8 Onboard Indicators



(**Rear View:** When viewing it from the rear side of the chassis)

GLAN LEDs

There are two GLAN ports on the motherboard. Each Gigabit Ethernet LAN port has two LEDs. The yellow LED indicates activity; while the Link LED may be green, amber or off to indicate the speed of the connection. See the tables at right for more information.

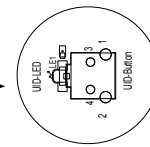
GLAN Activity Indicator		
Color	Status	Definition
Yellow	Flashing	Active

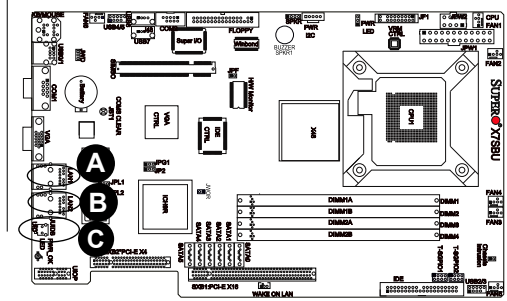
GLAN Link Indicator	
LED Color	Definition
Off	No Connection or 10 Mbps
Green	100 Mbps
Amber	1 Gbps

UID LED (LE2)

The Universal Identification LED Indicator is located at LE2 on the motherboard. When the blue indicator is on, either the Front Panel UID button or the Back Panel UID button has been pressed by the user to indicate the location of the unit. See the layout below for the LED location. See the table on the right for pin definitions.

UID-LED Indicator (LE2)	
LED Color	Definition
Off	UID-Button not in
On	Blue Light on, UID-Button is installed





A. JLAN1
B. JLAN2
C. UID LED (LE2)

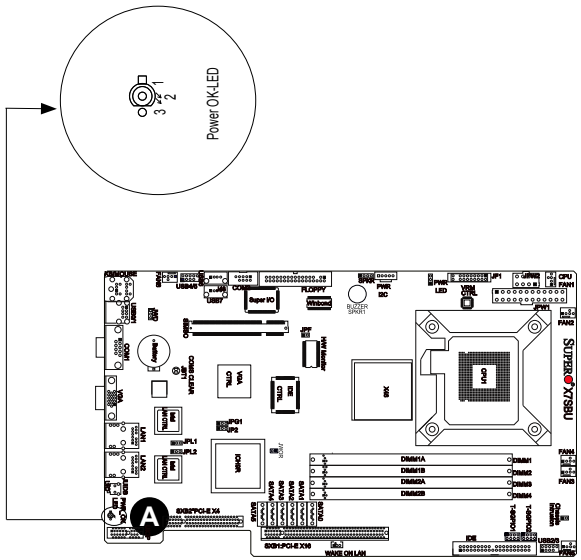
Power OK-LED (D64)

The Power OK-LED Indicator is located next to the SPEC Slot on the motherboard. See the table on the right for pin definitions.

Power OK LED Pin Definitions	
LED Color	Definition
Red	PWR or CPU Failure, CPU Overheat
Amber	System Off, PWR Cable connected
Green	System On, Operation: Normal

Onboard Power LED (LE1)

There is an Onboard power LED (LE1) located on the motherboard. When LE1 is off, the system is off. When the green light is on, the system is on.



A. Power OK-LED

2-9 Floppy, Hard Disk Drive and IPMI 2.0 Connections

Note the following when connecting the floppy and hard disk drive cables:

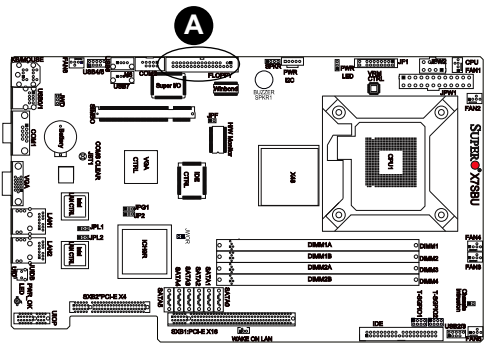
- The floppy disk drive cable has seven twisted wires.
- A red mark on a wire typically designates the location of pin 1.
- A single floppy disk drive ribbon cable has two connectors to provide for two floppy disk drives. The connector with twisted wires always connects to drive A, and the connector that does not have twisted wires always connects to drive B.

Floppy Connector

The floppy connector is located next to COM2. See the table below for pin definitions.

Floppy Drive Connector Pin Definitions (Floppy)

Pin#	Definition	Pin #	Definition
1	Ground	2	FDHDIN
3	Ground	4	Reserved
5	Key	6	FDEDIN
7	Ground	8	Index
9	Ground	10	Motor Enable
11	Ground	12	Drive Select B
13	Ground	14	Drive Select B
15	Ground	16	Motor Enable
17	Ground	18	DIR
19	Ground	20	STEP
21	Ground	22	Write Data
23	Ground	24	Write Gate
25	Ground	26	Track 00
27	Ground	28	Write Protect
29	Ground	30	Read Data
31	Ground	32	Side 1 Select
33	Ground	34	Diskette



A. Floppy

IDE Connector

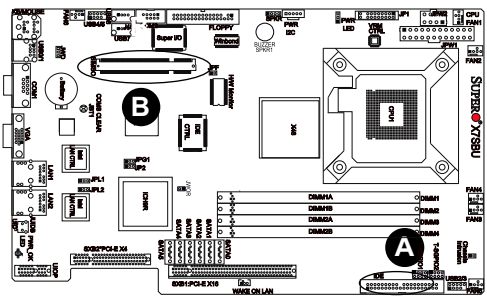
There is one IDE Connector on the motherboard. See the table on the right for pin definitions.

IDE Drive Connectors Pin Definitions (IDE)

Pin#	Definition	Pin #	Definition
1	Reset IDE	2	Ground
3	Host Data 7	4	Host Data 8
5	Host Data 6	6	Host Data 9
7	Host Data 5	8	Host Data 10
9	Host Data 4	10	Host Data 11
11	Host Data 3	12	Host Data 12
13	Host Data 2	14	Host Data 13
15	Host Data 1	16	Host Data 14
17	Host Data 0	18	Host Data 15
19	Ground	20	Key
21	DRQ3	22	Ground
23	I/O Write	24	Ground
25	I/O Read	26	Ground
27	IOCHRDY	28	BALE
29	DACK3	30	Ground
31	IRQ14	32	IOCS16
33	Addr1	34	Ground
35	Addr0	36	Addr2
37	Chip Select 0	38	Chip Select 1
39	Activity	40	Ground

SIMSO IPMI

There is an SIMSO IPMI 2.0 (Intelligent Power Management Interface) Slot on the motherboard. Refer to the layout below for the IPMI slot location.



A. IDE Drive
B. SIMSO IPMI

Chapter 3

Troubleshooting

3-1 Troubleshooting Procedures

Use the following procedures to troubleshoot your system. If you have followed all of the procedures below and still need assistance, refer to the 'Technical Support Procedures' and/or 'Returning Merchandise for Service' section(s) in this chapter. Always disconnect the AC power cord before adding, changing or installing any hardware components.

Before Power On

1. Make sure that the 8-pin 12v power connector is connected.
2. Make sure that there are no short circuits between the motherboard and chassis.
3. Disconnect all ribbon/wire cables from the motherboard, including those for the keyboard and mouse.
4. Remove all add-on cards.
5. Install a CPU and heatsink (making sure that it is fully seated) and then, connect the chassis speaker and the power LED to the motherboard. Check all jumper settings as well.
6. Make sure to use the correct type of CMOS battery as specified by the Manufacturer. Do not install the CMOS battery upside down to avoid possible explosion.

No Power

1. Make sure that there are no short circuits between the motherboard and the chassis.
2. Make sure that all jumpers are set to their default positions.
3. Check if the 115V/230V switch on the power supply is properly set.

4. Turn the power switch on and off to test the system.

5. The battery on your motherboard may be old. Check to verify that it still supplies ~3VDC. If it does not, replace it with a new one.

No Video

1. If the power is on, but you have no video--in this case, you will need to remove all the add-on cards and cables first.

2. Use the speaker to determine if any beep codes exist. (Refer to Appendix A for details on beep codes.)

3. Remove all memory modules and turn on the system. (If the alarm is on, check the specifications of memory modules, reset the memory or try different modules.)

4. If the power is on but you have no video, remove all the add-on cards and cables.

5. Use the speaker to determine if any beep codes exist. Refer to Appendix A for details on beep codes.

Note: If you are a system integrator, VAR or OEM, a POST diagnostics card is recommended.

Memory Errors

1. Make sure that the DIMM modules are properly and fully installed.

2. You should be using unbuffered DDR3 memory (see the next page). Also, it is recommended that you use the same memory speed for all DIMMs in the system. See Section 2-4 for memory limitations.

3. Check for bad DIMM modules or slots by swapping modules between slots and noting the results.

4. Check the power supply voltage 115V/230V switch.

Losing the System's Setup Configuration

1. Make sure that you are using a high quality power supply. A poor quality power supply may cause the system to lose the CMOS setup information. Refer to Section 1-6 for details on recommended power supplies.

2. The battery on your motherboard may be old. Check to verify that it still supplies ~3VDC. If it does not, replace it with a new one.

3. If the above steps do not fix the Setup Configuration problem, contact your vendor for repairs.

3-2 Technical Support Procedures

Before contacting Technical Support, please take the following steps. Also, note that as a motherboard manufacturer, Super Micro does not sell directly to end-users, so it is best to first check with your distributor or reseller for troubleshooting services. They should know of any possible problem(s) with the specific system configuration that was sold to you.

1. Please go through the 'Troubleshooting Procedures' and 'Frequently Asked Question' (FAQ) sections in this chapter or see the FAQs on our web site (http://www.supermicro.com/support/faqs/) before contacting Technical Support.

2. BIOS upgrades can be downloaded from our web site at (http://www.supermicro com/support/bios/).

Note: Not all BIOS can be flashed; it depends on the modifications to the boot block code.

3. If you still cannot resolve the problem, include the following information when contacting Super Micro for technical support:

- Motherboard model and PCB revision number
- BIOS release date/version (this can be seen on the initial display when your system first boots up).
- System configuration

An example of a Technical Support form is on our web site at (http://www.supermicro.com/support/contact.cfm).

4. Distributors: For immediate assistance, please have your account number ready when placing a call to our technical support department. We can be reached by

e-mail at support@supermicro.com, by phone at:(408) 503-8000, option 2, or by fax at (408)503-8019.

3-3 Frequently Asked Questions

Question: What type of memory does my motherboard support?

Answer: Both Unbuffered ECC and Non-ECC memory modules are supported. However, the functionality of ECC is not supported by DDR3 1600 MHz memory.X7SBU supports DDR3 up to 1600 MHz;. You can only install up to two 1600 MHz modules on the X7SBU (with one module in DIMM1B slot or DIMM2B slot or with two modules in both DIMM 1B and DIMM 2B slots

Question: How do I update my BIOS?

Answer: It is recommended that you **do not** upgrade your BIOS if you are not experiencing any problems with your system. Updated BIOS files are located on our web site at http://www.supermicro.com/support/bios/. Please check our BIOS warning message and the information on how to update your BIOS on our web site. Select your motherboard model and download the BIOS (.rom) file to your computer. Also, check the current BIOS revision and make sure that it is newer than your BIOS before downloading. You may choose the zip file or the .exe file. If you choose the zipped BIOS file, please unzip the BIOS file onto a bootable device or a USB pen/thumb drive. To flash the BIOS, run the batch file named "flash.bat" with the new BIOS .rom file from your bootable device or USB pen/thumb drive. Use the following format:

F:\> flash xxxxxxxx.rom <Enter>

Note: Be sure to insert a space immediately after "flash" and use only the file named "flash.bat" to update the BIOS.

When completed, your system will automatically reboot. If you choose the .exe file, please run the .exe file under Windows to create the BIOS flash floppy disk. Insert the floppy disk into the system you wish to flash the BIOS. Then, boot the system to the floppy disk. The BIOS utility will automatically flash the BIOS without any prompts. Please note that this process may take a few minutes to complete. Do not be concerned if the screen is paused for a few minutes.

Warning: Do not shut down or reset the system while updating the BIOS to prevent possible system boot failure!

When the BIOS flashing screen is completed, the system will reboot and will show "Press F1 or F2". At this point, you will need to load the BIOS defaults. Press <F1> to go to the BIOS setup screen, and press <F9> to load the default settings. Next, press <F10> to save and exit. The system will then reboot.

Note: The SPI BIOS chip installed on this motherboard is not removable. To repair or replace a damaged BIOS chip, please send your motherboard to RMA at Supermicro for service.

Question: What's on the CD that came with my motherboard?

Answer: The supplied compact disc has quite a few drivers and programs that will greatly enhance your system. We recommend that you review the CD and install the applications you need. Applications on the CD include chipset drivers for Windows and security and audio drivers.

Question: After I have installed 4 pieces of 1GB Memory, why does the BIOS only detect about 3.145 GB of memory during POST?

Answer: Because the chipset does not support memory remapping, and PCI-E memory requires a great deal of memory, so there is a memory hole located around the 4GB memory address.

Question: When I plug in my 1600 MHz XMP DDR3 memory into my X7SBU motherboard, the system hangs. How can I make it work at 1600MHz?

Answer: This is an issue with some memory vendors. Insert the memory module in the motherboard's black-colored slots.

3-4 Returning Merchandise for Service

A receipt or copy of your invoice marked with the date of purchase is required before any warranty service will be rendered. You can obtain service by calling your vendor for a Returned Merchandise Authorization (RMA) number. When returning to the manufacturer, the RMA number should be prominently displayed on the outside of the shipping carton, and mailed prepaid or hand-carried. Shipping and handling charges will be applied for all orders that must be mailed when service is complete.

For faster service, RMA authorizations may be requested online (http://www.supermicro.com/support/rma/).

This warranty only covers normal consumer use and does not cover damages incurred in shipping or from failure due to the alteration, misuse, abuse or improper maintenance of products.

During the warranty period, contact your distributor first for any product problems.

Notes

Chapter 4

BIOS

4-1 Introduction

This chapter describes the Phoenix BIOS™ Setup utility for the X7SBU. The Phoenix ROM BIOS is stored in a flash chip and can be easily upgraded using a floppy disk-based program.

Note: Due to periodic changes to the BIOS, some settings may have been added or deleted and might not yet be recorded in this manual. Please refer to the Manual Download area of the Super Micro web site <http://www.supermicro.com> for any changes to the BIOS not reflected in this manual.

System BIOS

The BIOS is the Basic Input Output System used in all IBM® PC, XT™, AT®, and PS/2® compatible computers. The Phoenix BIOS stores the system parameters, types of disk drives, video displays, etc. in the CMOS. The CMOS memory requires very little electrical power. When the computer is turned off, a backup battery provides power to the CMOS logic, enabling it to retain system parameters. Each time the computer is powered on, the computer is configured with the values stored in the CMOS logic by the system BIOS, which gains control at boot-up.

How To Change the Configuration Data

The CMOS information that determines the system parameters may be changed by entering the BIOS Setup utility. This Setup utility can be accessed by pressing the <Delete> key at the appropriate time during system boot. (See below.)

Starting the Setup Utility

Normally, the only visible POST (Power On Self Test) routine is the memory test. As the memory is being tested, press the <Delete> key to enter the main menu of the BIOS Setup utility. From the main menu, you can access the other setup screens, such as the Security and Power menus. Beginning with Section 4-3, detailed descriptions are given for each parameter setting in the Setup utility.

Warning: Do not shut down or reset the system while updating the BIOS to prevent possible boot failure.

4-2 Running Setup

Default settings are in bold text unless otherwise noted.

The BIOS setup options described in this section are selected by choosing the appropriate text from the main BIOS Setup screen. All displayed text is described in this section, although the screen display is often all you need to understand how to set the options (see the next page).

When you first power on the computer, the Phoenix BIOS™ is immediately activated.

While the BIOS is in control, the Setup program can be activated in one of two ways:

1. By pressing <Delete> immediately after turning the system on, or

2. When the message shown below appears briefly at the bottom of the screen during the POST (Power On Self-Test), press the <Delete> key to activate the main Setup menu.

Press the <Delete> key to enter Setup

4-3 Main BIOS Setup

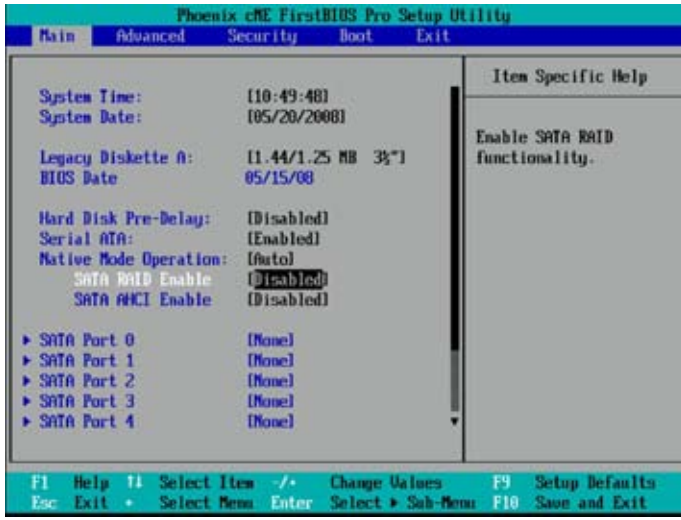
All main Setup options are described in this section. The main BIOS Setup screen is displayed below.

Use the Up/Down arrow keys to move among the different settings in each menu. Use the Left/Right arrow keys to change the options for each setting.

Press the <Esc> key to exit the CMOS Setup Menu. The next section describes in detail how to navigate through the menus.

Items that use submenus are indicated with the ▶icon. With the item highlighted, press the <Enter> key to access the submenu.

Main BIOS Setup Menu



Main Setup Features

System Time

To set the system date and time, key in the correct information in the appropriate fields. Then press the <Enter> key to save the data.

System Date

Using the arrow keys, highlight the month, day and year fields, and enter the correct data. Press the <Enter> key to save the data.

Legacy Diskette A

This setting allows the user to set the type of floppy disk drive installed as diskette A. The options are Disabled, 360Kb 5.25 in, 1.2MB 5.25 in, 720Kb 3.5 in, **1.44/1.25MB, 3.5 in** and 2.88MB 3.5 in.

BIOS Date

This item displays the date that the BIOS was built.

BIOS Revision

This item displays the BIOS revision number.

Hard Disk Pre-Delay

This setting allows the user to add a delay prior to the first access of a hard disk by the BIOS. The delay ensures that the hard disk has time to initialize before power up. The options are3, 6, 9, 12, 15, 21, 30 seconds and **Disabled**

Serial ATA

This setting allows you to enable or disable the function of the Serial ATA. The options are Disabled and **Enabled.**

Native Mode Operation

Select Serial ATA for SATA or select Auto (Native Mode) for ATA. The options are: Serial ATA and **Auto.**

Note: Auto may cause Linux to recognize SATA hard drives as IDE drives

SATA RAID Enable

This setting allows you to enable or disable the SATA RAID functionality. The options are **Disabled** and Enabled.

ICH RAID Code Base

Select Intel to enable the Intel SATA RAID firmware. Select Adaptec to use the Adaptec HostRAID firmware. The options are **Intel** and Adaptec**.**

SATA AHCI Enable

Enhanced AHCI: WinXP-SPI + IAA driver supports AHCI mode. The options are **Disabled** and Enabled.

SATA AHCI Legacy Enable (This appears if SATA AHCI Enable above is set to Enabled)

Select Enable to use Legacy Mode for SATA Advanced Host Interfacing. When this feature is set to Enabled, SATA Port 5 and SATA Port 6 are disabled. (Take caution when using this function. This feature is for advanced programmers only.) The options are Enabled and **Disabled**.

▶ SATA Port 0, SATA Port 1, SATA Port 2, SATA Port 3, SATA Port 4, and SATA Port 5, Ext. Primary Master, Ext. Primary Slave

Extended Primary Master/Slave

These settings allow the user to set the parameters of IDE Primary Master/Slave, IDE Secondary Master/Slave, SATA Port3/SATA Port4 and Extended Primary Master/Slave slots. Hit <Enter> to activate the following sub-menu screen for

detailed options of these items. Set the correct configurations accordingly. The items included in the sub-menu are:

Type

This option allows the user to select the type of IDE hard drive. Select **Auto** to allow the BIOS to automatically configure the parameters of the HDD installed on a slot. Enter a number between 1 to 39 to select a predetermined HDD type. Select User to allow the user to enter the parameters of the HDD installed. Select CDROM if a CDROM drive is installed. Select ATAPI if a removable disk drive is installed.

Multi-Sector Transfers

This item allows the user to specify the number of sectors per block to be used in multi-sector transfer. The options are **Disabled**, 4 Sectors, 8 Sectors, and 16 Sectors.

LBA Mode Control

This item determines whether the Phoenix BIOS will access the IDE Primary Master Device via the LBA mode. The options are Enabled and **Disabled.**

32 Bit I/O

This option allows the user to enable or disable the function of 32-bit data transfer. The options are Enabled and **Disabled**.

Transfer Mode

This option allows the user to set the transfer mode. The options are **Standard**, Fast PIO1, Fast PIO2, Fast PIO3, Fast PIO4, FPIO3/DMA1 and FPIO4/DMA2.

Ultra DMA Mode

This option allows the user to configure the Ultra DMA Mode setting. The options are **Disabled**, Mode 0, Mode 1, Mode 2, Mode 3, Mode 4, and Mode 5.

System Memory

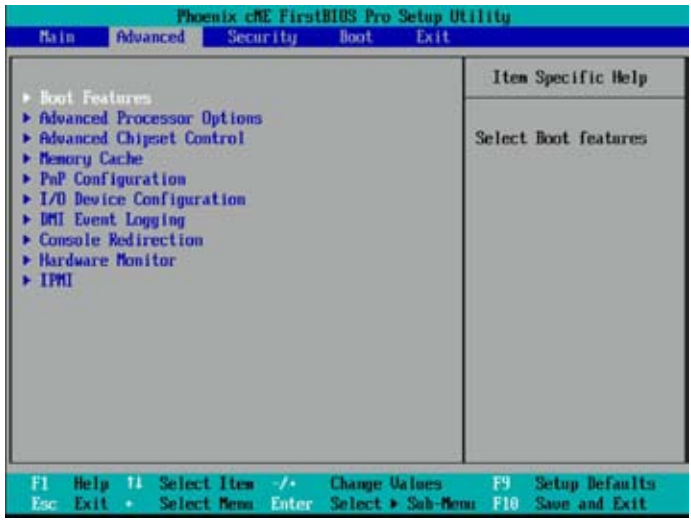
This display informs you how much system memory is available in the system.

Installed Memory

This display informs you how much memory installed in the system is detected by the BIOS.

4-4 Advanced Setup

Choose Advanced from the Phoenix BIOS Setup Utility main menu with the arrow keys. You should see the following display. The items with a triangle beside them have sub- menus that can be accessed by highlighting the item and pressing <Enter>.



▶Boot Features

Access the submenu to make changes to the following settings

Quiet Boot

This setting allows you to **Enabled** or Disabled the graphic logo screen display during bootup.

QuickBoot Mode

If enabled, this feature will speed up the POST (Power On Self Test) routine by skipping certain tests after the computer is turned on. The settings are Enabled and **Disabled.** If Disabled, the POST routine will run at normal speed.

POST Error

Use the setting to Pause and Display SETUP entry or resume boot prompt if error occurs on boot disabled. The options are **Enabled** and Disabled.

ACPI Mode

Use the setting to determine whether you want to use the ACPI (Advanced Configuration and Power Interface) power management on your system. The options are **Yes** and No.

Power Button Behavior

If set to Instant-Off, the system will power on or power off immediately as soon as you hit the power button. The options are **Instant-Off** and 4-second Override.

Resume On Modem Ring

Select On to "wake your system up" when an incoming call is received by your modem. The options are On and **Off**.

Resume On PME#

Select On to "wake your system up" from the PME#. The options are **On** and Off.

Power Loss Control

This setting allows you to choose how the system will react when power returns after an unexpected loss of power. The options are Stay Off, Power On, and **Last State.**

Watch Dog

Select Enabled to automatically reset the system if the system is not active for more than 5 minutes. The options are Enabled and **Disabled**.

Extend Shadow RAM

The feature allocates more Shadow RAM for devices that may need more than the system's default. The options are **Disabled** and Enabled.

Summary Screen

This setting allows you to **Enabled** or Disabled the summary screen which displays the system configuration during bootup.

▶Advanced Processor Options

Access the submenu to make changes to the following settings.

CPU Speed

This is a display that indicates the speed of the installed processor.

Frequency Ratio (Available when supported by the CPU)

The feature allows you to set the internal frequency multiplier for the CPU. The feature depends on the CPU flexibility. The options are: Default, x6, x7, x8, x9, x10 and x11.

Frequency High Ratio (Available when supported by the CPU)

The feature allows you to set the high ratio internal frequency multiplier for the Intel SpeedStep CPUs. The settings are: Default, +6% to +11%, +12% to +27%. (Note: If a wrong ratio that is not supported by the CPU is selected, the system may hang. If this happens, clear the CMOS to recover the system.)

Machine Checking (Available when supported by the CPU)

Set to Enabled to activate the function of Machine Checking and allow the CPU to detect and report hardware (machine) errors via a set of model-specific registers (MSRs). The options are Disabled and **Enabled**.

Compatible FPU Code (Available when supported by the CPU)

Set to Enabled to keep the content of the last instruction Operating Code (OPCode) in the floating point (FP) state. The options are **Disabled** and Enabled.

Adjacent Cache Line Prefetch (Available when supported by the CPU)

The CPU fetches the cache line for 64 bytes if this option is set to Disabled. The CPU fetches both cache lines for 128 bytes as comprised if Enabled. The options are Disabled and **Enabled**.

Set Maximum Ext. CPUID=3

When set to Enabled, the Maximum Extended CPUID will be set to 3. The options are **Disabled** and Enabled.

Echo TPR

Set to Enabled to prevent xTPR messages from being sent to the system. The options are Disabled and **Enabled**.

C1 Enhanced Mode (Available when supported by the CPU)

Set to Enabled to enable the Enhanced Halt State to lower CPU voltage/frequency to prevent overheat. The options are Enabled and **Disabled**.

Please refer to Intel's web site (www.intel.com) for detailed information.

No Execute Mode Memory Protection (Available when supported by the CPU and the OS)

Set to Enabled to enable Execute Disable Bit and allow the processor to classify areas in memory where an application code can execute and where it cannot, and thus preventing a worm or a virus from inserting and creating a flood of codes to overwhelm the processor or damage the system during an attack.

This feature is available when your OS and your CPU support the function of Execute Disable Bit.) The options are Disabled and **Enabled**. (Note: For more information regarding the hardware/software support for this function, please refer to Intel's and Microsoft's web sites.

Enhanced Intel® Speed Step Support (Available when supported by the CPU)

Select Enabled to use the Enhanced Intel® SpeedStep Technology and allows the system to automatically adjust the processor voltage and core frequency in an effort to reduce power consumption and heat dissipation. The options are Enabled (-C States, GV1/GV3 are enabled), **GV1/GV3 Only** (C States: Disabled), C-States Only (-G1/G3: Disabled), and Disabled (-C States, GV1/GV3 are disabled). Please refer to Intel's web site (www.intel.com) for detailed information.

Hyperthreading (Available when supported by the CPU)

Set to Enabled to use the Hyperthreading Technology, which will result in increased CPU performance. The options are Disabled and **Enabled.**

Core Multi-Processing (Available when supported by the CPU)

Set to Enabled to use a processor's Second Core and beyond. (Please refer to Intel's web site for more information.) The options are Disabled and **Enabled.**

Intel® Enhanced Debug (Recommended for maintenance)

This feature allows an operating system level debug of issues that may be processor related. The options are **Enabled** and Disabled.

Thermal Management 2 (Available when supported by the CPU)

Set to **Enabled** to use Thermal Management 2 (TM2,) which will lower the CPU voltage and frequency when the CPU temperature reaches a predefined overheat threshold. Set to Disabled to use Thermal Manager 1 (TM1), allowing CPU clocking to be regulated via the CPU Internal Clock modulation when the CPU temperature reaches the overheat threshold.

Intel® Virtualization Technology (Available when supported by the CPU)

Select Enabled to use the feature of Virtualization Technology to allow one platform to run multiple operating systems and applications in independent partitions, creating multiple virtual systems in one computer. The options are Enabled and **Disabled**. If there is any change to this setting, you will need to power off and restart the system for the change to take effect.) Please refer to Intel's web site (www.intel.com) for detailed information.

▶Advanced Chipset Control

Access the submenu to make changes to the following settings.

Warning: Take caution when changing the Advanced settings. An Incorrect value, a very high DRAM frequency or an incorrect DRAM timing may cause system to become unstable. When this occurs, reset the setting to the default setting.

Clock Spectrum Feature

If Enabled, the BIOS will monitor the level of Electromagnetic Interference caused by the components and will attempt to decrease the interference whenever needed. The options are Enabled and Disabled.

Memory Remapping

This feature allows the bios reserve memories to remap the memory above the 4GB to 5GB area when using 4GB of memory. The settings are **enabled** and disabled.

Enable VT-d

Select Enable to enable the functionality of the Intel Virtualization Technology for Direct I/O support, which offers fully-protected I/O resource-sharing across the Intel platforms, providing the user with greater reliability, security and availability in networking and data-sharing. The settings are Enabled and **Disabled**.

High Precision Event Timer

Select Yes to activate this feature which is capable of producing periodic interrupts at a much higher frequency than a Real-time Clock (RTC) can in synchronizing multimedia streams, providing smooth playback and reducing the dependency on other timestamp calculation devices, such as an X86 RDTSC Instruction embedded in a CPU. THe High Precision Event Timer is used to replace the 8254 Prorammable Interval Timer. The options are Yes and **No.**

USB Host Controller

This feature **enables** or disables USB Controller in Dev 29 Function 0,1,2,3,7.

EHCI Controller

This feature enables the onboard Enhanced Host Controller Interface. The options **Enabled** and Disabled.

Legacy USB Support

This feature enables support for legacy universal serial bus. The options are **enable** and disable.

▶Memory Cache

Cache System BIOS Area

This setting allows you to designate a reserve area in the system memory to be used as a System BIOS buffer and allow BIOS to write (cache) data into this reserved memory area. Select **Write Protect** to enable this function, and this area will be reserved for BIOS ROM access only. Select Uncached to disable this function and make this area available for other devices.

Cache Video BIOS Area

This setting allows you to designate a reserve area in the system memory to be used as a Video BIOS buffer and allow BIOS to write (cache) data into this reserved memory area. Select default to enable the function and this area will be reserved for Video BIOS ROM access only. Select Uncached to disable this function and make this area available for other devices.

Cache Base 0-512K

If enabled, this feature will allow the data stored in the base memory area: block 0-512K to be cached (written) into a buffer, a storage area in the Static DROM (SDROM) or to be written into L1, L2 cache inside the CPU to speed up CPU operations. Select Uncached to disable this function. Select Write Through to allow data to be cached into the buffer and written into the system memory at the same time. Select Write Protect to prevent data from being written into the base memory area of Block 0-512K. Select Write Back to allow the CPU to write data back directly from the buffer without writing data to the System Memory for fast CPU data processing and operation. The options are Uncached, Write Through, **Write Protect**, and Write Back.

Cache Base 512K-640K

If enabled, this feature will allow the data stored in the memory area: 512K-640K to be cached (written) into a buffer, a storage area in the Static DROM (SDROM) or written into L1, L2, L3 cache inside the CPU to speed up CPU operations. Select Uncached to disable this function. Select Write Through to allow data to be cached into the buffer and written into the system memory at the same time. Select Write Protect to prevent data from being written into the base memory area of Block 512K-640K. Select Write Back to allow the CPU to write data back directly from the buffer without writing data to the System Memory for fast CPU data processing and operation. The options are Uncached, Write Through, Write Protect, and **Write Back.**

Cache Extended Memory

If enabled, this feature will allow the data stored in the extended memory area to be cached (written) into a buffer, a storage area in the Static DROM (SDROM) or written into L1, L2, L3 cache inside the CPU to speed up CPU operations. Select Uncached to disable this function. Select Write Through to allow data to be cached into the buffer and written into the system memory at the same time. Select Write Protect to prevent data from being written into the extended memory area above 1 MB. Select Write Back to allow the CPU to write data back directly from the buffer without writing data to the System Memory for fast CPU data processing and operation. The options are Uncached, Write Through, Write Protect, and **Write Back**.

▶PNP Configuration

Access the submenu to make changes to the following settings for PNP (Play & Plug) devices.

Onboard LAN 1 and Onboard LAN 2

Option ROM Scan

When enabled, this setting will initialize the device expansion ROM. The options are **Enabled** and Disabled.

Latency Timer

This setting allows you to set the clock rate for Bus Master. A high-priority, high-throughout device may benefit from a greater clock rate. The options are **Default**, 0020h, 0040h, 0060h, 0080h, 00A0h, 00C0h, and 00E0h. For Unix, Novelle and other Operating Systems, please select the option: other. If a drive fails after the

installation of a new software, you might want to change this setting and try again. A different OS requires a different Bus Master clock rate.

▶PCIe x8 L-Slot (up), PCIe x8 L-Slot (down), PCIe x4 R-Slot

Access the submenu for each of the settings above to make changes to the following:

Option ROM Scan

When enabled, this setting will initialize the device expansion ROM. The options are **Enabled** and Disabled.

Enable Master

This setting allows you to enable the selected device as the PCI bus master. The options are **Enabled** and Disabled.

Latency Timer

This setting allows you to set the clock rate for Bus Master. A high-priority, high-throughout device may benefit from a greater clock rate. The options are **Default**, 0020h, 0040h, 0060h, 0080h, 00A0h, 00C0h, and 00E0h. For Unix, Novell and other Operating Systems, please select the option: Other. If a drive fails after the installation of a new software, you might want to change this setting and try again. A different OS requires a different Bus Master clock rate.

▶I/O Device Configuration

Access the submenu to make changes to the following settings.

KBC Clock Input

This setting allows you to select the clock frequency for the Keyboard Controller. The options are 6MHz, 8MHz, **12MHz**, and 16MHz.

Serial Port A

This setting allows you to decide how the system controls Serial Port A. The options are **Enabled** (user defined), Disabled.

Base I/O Address

This setting allows you to select the base I/O address for Serial Port A. The options are **3F8**, 2F8, 3E8, and 2E8.

Interrupt

This setting allows you to select the IRQ (interrupt request) for Serial Port A. The options are IRQ3 and **IRQ4**.

Serial Port B

This setting allows you to decide how the system controls Serial Port B. The options are **Enabled** (user defined), Disabled.

Mode

This setting allows you to set the type of device that will be connected to Serial Port B. The options are **Normal** and IR (for an infrared device) and ASK-IR.

Base I/O Address

This setting allows you to select the base I/O address for Serial Port B. The options are 3F8, **2F8**, 3E8 and 2E8.

Interrupt

This setting allows you to select the IRQ (interrupt request) for Serial Port B. The options are **IRQ3** and IRQ4.

Floppy Disk Controller

This setting allows you to assign control of the floppy disk controller. The options are **Enabled** (user defined), Disabled, and Auto (BIOS and OS controlled).

▶DMI Event Logging

Event Log Validity

This setting allows you to report the validity of the DMI event log.

Event Log Capacity

This setting allows you to report the space available in the DMI event log. Full indicates the DMI log has no more space available to store DMI events.

View DMI Event Log

This setting allows the user to view the events in the DMI log.

Event Logging

Select **Enable** to log DMI events.

Mark DMI Events as Read

This setting allows you to mark DMI events as read.

Clear all DMI Event Logs

Setting this option to Yes will clear the DMI event log before rebooting. The options are Yes and **No.**

▶Console Redirection

Access the submenu to make changes to the following settings:

COM Port Address

This setting will allow you to specify which COM port to direct the remote console to: Onboard COM A or Onboard COM B. The options are Onboard COM A, Onboard COM B and **Disabled**. Note: If an IPMI device is installed, the default value is **On-board COM B**.

Baud Rate

This setting will enable you to set the baud rate for the console redirection. The options are 300,1200, 2400, 9600, **19.2 K**, 38.4K, 57.6K, and 115.2K.

Console Type

This setting will enable you to set the console redirection type. The options are VT100, VT100 (8bit), PC-ANSI (7bit), **PC ANSI**, VT100+, VT-UTF8 and ASCII.

Flow Control

This setting enables you to select the flow control option for the console. The options are: None, XON/XOFF, and **CTS/RTS.**

Console Connection

This setting allows you to decide how the console redirection is to be connected. The options are **Direct** or Via Modem.

Continue CR after Post

This setting allows you to decide if you would like to continue with the console redirection after the POST routine. The options are On and **Off.**

▶Hardware Monitoring

Highlight this and press <Enter> to see the status of each of the following items:

CPU Overheat Alarm

This option allows the user to select the CPU Overheat Alarm setting which determines when the CPU OH alarm will be activated to provide warning of possible CPU overheat. Refer to the the next item, CPU Temperature for more information regarding PECI, DTS and other thermal features of this motherboard.

> **Warning:** Any temperature that exceeds the CPU threshold temperature predefined by the CPU manufacturer may result in CPU overheat or system instability. When the CPU temperature reaches this predefined threshold, the CPU and system cooling fans will run at full speed.

The options are:

The Default Alarm Setting: Select this setting if you want the CPU overheat alarm (including the LED and the buzzer) to be triggered when the CPU temperature reaches about +5 PECI counts above the threshold temperature as predefined by the CPU manufacturer to give the CPU and system fans additional time needed for CPU and system cooling.

The Early Alarm Setting: Select this setting if you want the CPU overheat alarm (including the LED and the buzzer) to be triggered as soon as the CPU temperature reaches the CPU overheat threshold as predefined by the CPU manufacturer.

CPU Temperature

The CPU Temperature feature will display the CPU temperature status as detected by the BIOS:

Low – This level is considered as the 'normal' operating state. The CPU temperature is well below the CPU 'Temperature Tolerance'. The motherboard fans and CPU will run normally as configured in the BIOS (Fan Speed Control).

User intervention: No action required.

Medium – The processor is running warmer. This is a 'precautionary' level and generally means that there may be factors contributing to this condition, but the CPU is still within its normal operating state and below the CPU 'Temperature Tolerance'. The motherboard fans and CPU will run normally as configured in the BIOS. The fans may adjust to a faster speed depending on the Fan Speed Control settings.

User intervention: No action is required. However, consider checking the CPU fans and the chassis ventilation for blockage.

High – The processor is running hot. This is a 'caution' level since the CPU's 'Temperature Tolerance' has been reached (or has been exceeded) and may activate an overheat alarm:

The Default Alarm – the Overheat LED and system buzzer will activate if the High condition continues for some time after it is reached. The CPU fan will run at full

speed to bring the CPU temperature down. If the CPU temperature still increases even with the CPU fan running at full speed, the system buzzer will activate and the Overheat LED will turn on.

The Early Alarm – the Overheat LED and system buzzer will be activated exactly when the High level is reached. The CPU fan will run at full speed to bring the CPU temperature down.

Note: In both the alarms above, please take immediate action as shown below. See CPU Overheat Alarm to modify the above alarm settings.

User intervention: If the system buzzer and Overheat LED has activated, take action immediately by checking the system fans, chassis ventilation and room temperature to correct any problems. Note: the system may shut down if it continues for a long period to prevent damage to the CPU.

Notes: The CPU thermal technology that reports absolute temperatures (Celsius/Fahrenheit) has been upgraded to a more advanced feature by Intel in its newer processors. The basic concept is each CPU is embedded by unique temperature information that the motherboard can read. This 'Temperature Threshold' or 'Temperature Tolerance' has been assigned at the factory and is the baseline on which the motherboard takes action during different CPU temperature conditions (i.e., by increasing CPU Fan speed, triggering the Overheat Alarm, etc). Since CPUs can have different 'Temperature Tolerances', the installed CPU can now send information to the motherboard what its 'Temperature Tolerance' is, and not the other way around. This results in better CPU thermal management.

Supermicro has leveraged this feature by assigning a temperature status to certain thermal conditions in the processor (Low, Medium and High). This makes it easier for the user to understand the CPU's temperature status, rather than by just simply seeing a temperature reading (i.e., 25^{o}C).

The information provided above is for your reference only. For more information on thermal management, please refer to Intel's Web site at www.Intel.com.

System Temperature

This item displays the absolute system temperature as detected by the BIOS.

CPU Fan/Fan1 to Fan 6

If the feature of Auto Fan Control is enabled, the BIOS will automatically display the status of the fan as specified.

Fan Speed Control Modes

This feature allows you to decide how the system controls the speeds of the onboard fans. The CPU temperature and the fan speed are correlative. When the CPU on-die temperature increases, the fan speed will also increase, and vice versa. If the option is set to "4-pin", the fan speed will be controlled by Pulse Width Modulation (PWM). Select "Workstation" if your system is used as a Workstation. Select "Disable" to disable the fan speed control function to allow the onboard fans to constantly run at full speed (12V). The Options are: **Disabled (Full Speed)**, 3-pin (server), 3-pin (workstation), 4-pin (server) and 4-pin (workstation). Do not select 4-pin settings if you have a mix of 3-pin and 4-pin fans.

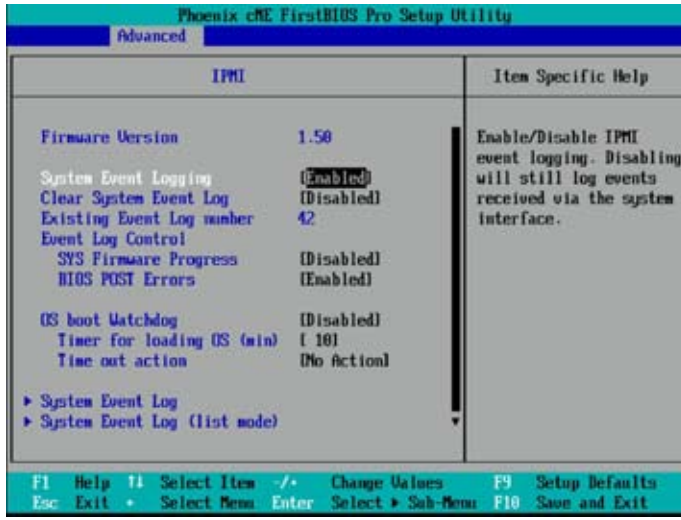
Voltage Monitoring

The following items will be monitored and displayed:

VcoreA, +1.25V, -12V, V_DIMM, +3.3V, +12V, 5Vsb, 5Vdd, P_VTT, Vbat

Note: In the Windows OS environment, the Supero Doctor III settings take precedence over the BIOS settings. When first installed, Supero Doctor III adopts the temperature threshold settings previously set in the BIOS. Any subsequent changes to these thresholds must be made within Supero Doctor, since the SD III settings override the BIOS settings. For the Windows OS to adopt the BIOS temperature threshold settings, please change the SDIII settings to be the same as those set in the BIOS.

▶IPMI (The option is available only when an IPMI card is installed in the system.)


Phoenix cME FirstBIOS Pro Setup Utility
Advanced
IPMI
Item Specific Help
Firmware Version 1.50
System Event Logging [Enabled]
Clear System Event Log [Disabled]
Existing Event Log number 42
Event Log Control
SYS Firmware Progress [Disabled]
BIOS POST Errors [Enabled]
OS boot Watchdog [Disabled]
Timer for loading OS (min) [10]
Time out action [No Action]
▸ System Event Log
▸ System Event Log (list mode)
Enable/Disable IPMI event logging. Disabling will still log events received via the system interface.
F1 Help ↑↓ Select Item -/+ Change Values F9 Setup Defaults
Esc Exit ↔ Select Menu Enter Select ▸ Sub-Menu F10 Save and Exit

Firmware Version: This item displays the current Firmware Version.

System Event Logging

Select Enabled to enable IPMI Event Logging. When this function is set to Disabled, the system will continue to log events received via system interface. The options are **Enabled** and Disabled.

Clear System Event Logging

Enabling this function to force the BIOS to clear the system event logs during the next cold boot. The options are Enabled and **Disabled**.

Existing Event Log Number

This item displays the number of the existing event log.

Event Log Control

System Firmware Progress

Enabling this function to log POST progress. The options are Enabled and **Disabled**.

BIOS POST Errors

Enabling this function to log POST errors. The options are **Enabled** and Disabled.

OS Boot Watch Dog

Set to Enabled to enable OS Boot Watch Dog. The options are Enabled and **Disabled**.

Timer for Loading OS (Minutes)

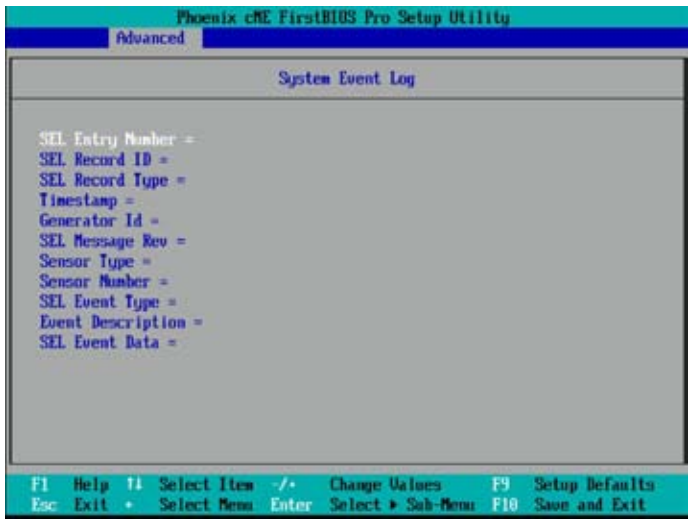
This feature allows the user to set the time value (in minutes) for the previous item: OS Boot Watch Dog by keying-in a desired number in the blank. The default setting is **10** (minutes.) (Please ignore this option when OS Boot Watch Dog is set to "Disabled".)

Time Out Action

This item allows the user to decide what action to take in an event of a system boot failure. The options are **No Action**, Reset, Power Off and Power Cycles

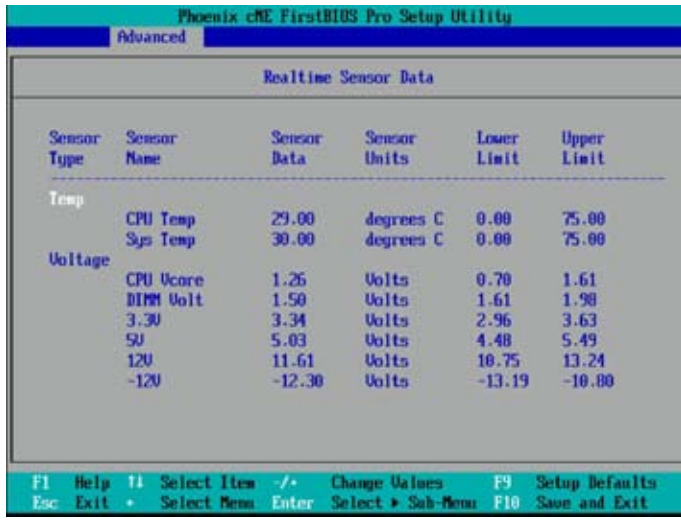
▶System Event Log/System Event Log (List Mode)

These options display the System Event (SEL) Log and System Event (SEL) Log in List Mode. Items include: SEL (System Event Log) Entry Number, SEL Record ID, SEL Record Type, Time Stamp, Generator ID, SEL Message Revision, Sensor Type, Sensor Number, SEL Event Type, Event Description, and SEL Event Data.


Phoenix cME FirstBIOS Pro Setup Utility
Advanced
System Event Log
SEL Entry Number =
SEL Record ID =
SEL Record Type =
Timestamp =
Generator Id =
SEL Message Rev =
Sensor Type =
Sensor Number =
SEL Event Type =
Event Description =
SEL Event Data =
F1 Help ↑↓ Select Item -/+ Change Values F9 Setup Defaults
Esc Exit ↔ Select Menu Enter Select ▸ Sub-Menu F10 Save and Exit

▶Realtime Sensor Data

This feature display information from motherboard sensors, such as temperatures, fan speeds and voltages of various components.


Phoenix cME FirstBIOS Pro Setup Utility
Advanced
Realtime Sensor Data
Sensor Type
Sensor Name
Sensor Data
Sensor Units
Lower Limit
Upper Limit
Temp
CPU Temp 29.00 degrees C 0.00 75.00
Sys Temp 30.00 degrees C 0.00 75.00
Voltage
CPU Vcore 1.25 Volts 0.70 1.61
DIMM Volt 1.50 Volts 1.61 1.98
3.3V 3.34 Volts 2.96 3.63
5V 5.03 Volts 4.48 5.49
12V 11.61 Volts 10.75 13.24
-12V -12.30 Volts -13.19 -10.80
F1 Help ↑↓ Select Item -/+ Change Values F9 Setup Defaults
Esc Exit ↔ Select Menu Enter Select ▸ Sub-Menu F10 Save and Exit

▶IPMI LAN Configuration

VLAN Tagging

Select Enabled to enable Virtual LAN(s) for IPMI connections and allow the user to configure VLAN settings. The options are Enabled and **Disabled**.

VLAN ID

This item allows the user to change the VLAN ID. The default setting is **1h.**

IP Address Source

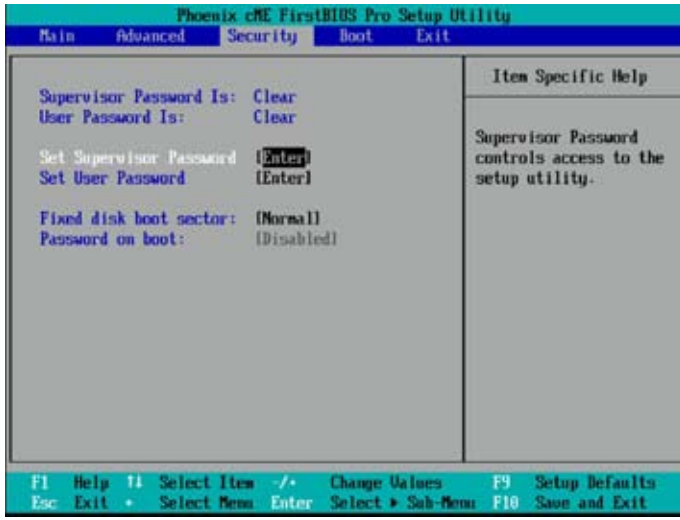
This item allows the user to select the IP address source for the connection. The options are **DHCP** and Static.

Update LAN Settings

Select Yes to allow BIOS update LAN setting. The options are Yes and **No**.

4-5 Security Settings

Choose Security from the Phoenix BIOS Setup Utility main menu with the arrow keys. You should see the following display. Security setting options are displayed by highlighting the setting using the arrow keys and pressing <Enter>. All Security BIOS settings are described in this section.


Phoenix cME FirstBIOS Pro Setup Utility
Main
Advanced
Security
Boot
Exit
Item Specific Help
Supervisor Password Is: Clear
User Password Is: Clear
Set Supervisor Password [Enter]
Set User Password [Enter]
Fixed disk boot sector: [Normal]
Password on boot: [Disabled]
Supervisor Password controls access to the setup utility.
F1 Help ↑↓ Select Item -/+ Change Values F9 Setup Defaults
Esc Exit ↔ Select Menu Enter Select ▸ Sub-Menu F10 Save and Exit

Supervisor Password Is:

This item indicates if a supervisor password has been entered for the system. **Clear** means such a password has not been used and Set means a supervisor password has been entered for the system.

User Password Is:

This item indicates if a user password has been entered for the system. **Clear** means such a password has not been used and Set means a user password has been entered for the system.

Set Supervisor Password

When the item Set Supervisor Password is highlighted, hit the **<Enter>** key. When prompted, type the Supervisor's password in the dialogue box to set or to change supervisor's password, which allows access to the BIOS.

Set User Password

When the item Set User Password is highlighted, hit the **<Enter>** key. When prompted, type the user's password in the dialogue box to set or to change the user's password, which allows access to the system at boot-up.

Fixed Disk Boot Sector

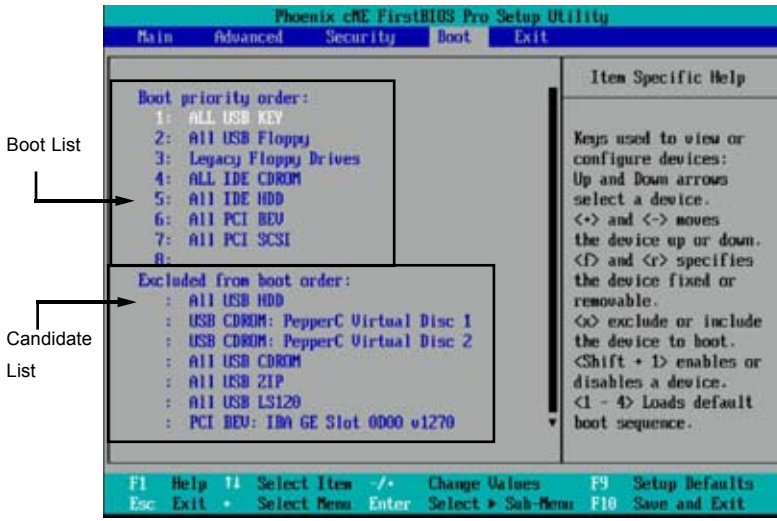
Select Write-Protect to protect the boot sector on the hard drives against viruses. The options are **Normal** and Write Protect.

Password on Boot

When this feature is set to Enabled, a password is required for a user to enter the system at bootup. The options are Enabled (password required) and **Disabled** (password not required).

4-6 Boot Settings

Choose Boot from the Phoenix BIOS Setup Utility main menu with the arrow keys. You should see the following display. See details on how to change the order and specs of boot devices in the Item Specific Help window. All Boot BIOS settings are described in this section.

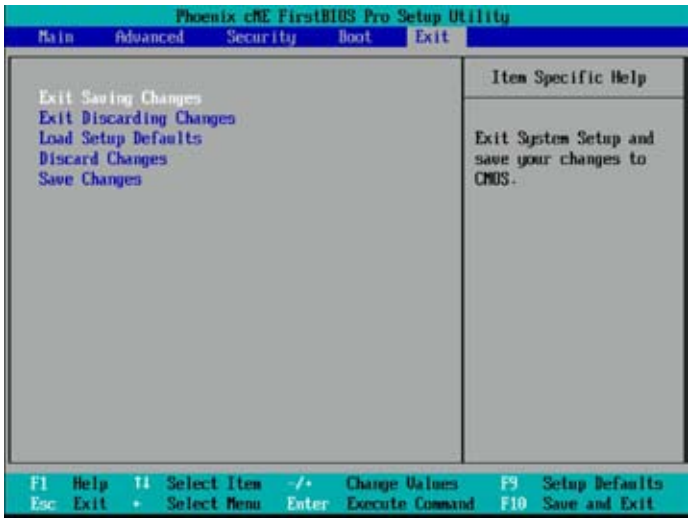

Boot List
Candidate List
Phoenix cME FirstBIOS Pro Setup Utility
Main
Advanced
Security
Boot
Exit
Boot priority order:
1: ALL USB KEY
2: All USB Floppy
3: Legacy Floppy Drives
4: ALL IDE CDROM
5: All IDE HDD
6: All PCI BEV
7: All PCI SCSI
8:
Excluded from boot order:
: All USB HDD
: USB CDROM: PepperC Virtual Disc 1
: USB CDROM: PepperC Virtual Disc 2
: All USB CDROM
: All USB ZIP
: All USB LS120
: PCI BEV: IBA GE Slot 0D00 v1270
Item Specific Help
Keys used to view or configure devices:
Up and Down arrows select a device.
<+> and <-> moves the device up or down.
<f> and <r> specifies the device fixed or removable.
<x> exclude or include the device to boot.
<Shift + 1> enables or disables a device.
<1 - 4> Loads default boot sequence.
F1 Help ↑↓ Select Item -/+ Change Values F9 Setup Defaults
Esc Exit ↔ Select Menu Enter Select ▸ Sub-Menu F10 Save and Exit

Boot Priority Order/Excluded from Boot Orders

The devices included in the boot list section (above) are bootable devices listed in the sequence of boot order as specified. The boot functions for the devices included in the candidate list (above) are currently disabled. Use a <+> key or a <-> key to move the device up or down. Use the <f> key or the <r> key to specify the type of an USB device, either fixed or removable. You can select one item from the boot list and hit the <x> key to remove it from the list of bootable devices (to make its resource available for other bootable devices). Subsequently, you can select an item from the candidate list and hit the <x> key to remove it from the candidate list and put it in the boot list. This item will then become a bootable device. See details on how to change the priority of boot order of devices in the Item Specific Help window.

4-7 Exit

Choose Exit from the Phoenix BIOS Setup Utility main menu with the arrow keys. You should see the following display. All Exit BIOS settings are described in this section.



Exit Saving Changes

Highlight this item and hit <Enter> to exit the BIOS Setup utility while saving any changes you may have made.

Exit Discarding Changes

Highlight this item and hit <Enter> to exit the BIOS Setup utility without saving any changes you may have made.

Load Setup Defaults

Highlight this item and hit <Enter> to load the default settings for all items in the BIOS Setup. These are the safest settings to use.

Discard Changes

Highlight this item and hit <Enter> to discard (cancel) any changes you made. You will remain in the Setup utility.

Save Changes

Highlight this item and hit <Enter> to save any changes you made. You will remain in the Setup utility.

Notes

Appendix A

POST Error Beep Codes

This section lists POST (Power On Self Test) error beep codes for the Phoenix BIOS. POST error beep codes are divided into two categories: recoverable and terminal. This section lists Beep Codes for recoverable POST errors.

Recoverable POST Error Beep Codes

When a recoverable type of error occurs during POST, BIOS will display a POST code that describes the problem. BIOS may also issue one of the following beep codes:

1 long and two short beeps - video configuration error

1 repetitive long beep - no memory detected

1 continuous beep with front panel Overheat LED on - system overheat

Notes

Appendix B

Installing the Windows OS

After all hardware components have been installed, you must first configure Intel South Bridge RAID Settings before you install the Windows OS and other software drivers. To configure RAID settings, please refer to RAID Configuration User Guides posted on our website at www.supermicro.com/support/manuals.

B-1 Installing the Windows XP/2000/2003 OS for Systems with RAID Functions

1. Insert Microsoft's Windows XP/2000/2003 Setup CD in the CD Driver, and the system will start booting up from CD.

2. Press the <F6> key when the message-" Press F6 if you need to install a third party SCSI or RAID driver" displays.

3. When the Windows XP/2000/2003 Setup screen appears, press "S" to specify additional device(s).

4. Insert the driver diskette-"ITE RAID XP/2000/2003 Driver for IDE" into Drive A: and press the <Enter> key.

5. When the Windows XP/2000/2003 Setup screen appears, press "S" to specify additional device(s).

6. Insert the driver diskette-"Intel AA RAID XP/2000/2003 Driver for ICH9R" into Drive A: and press the <Enter> key.

7. Choose the Intel(R) ICH9R *SATA RAID Controller* from the list indicated in the XP/2000/2003 Setup Screen, and press the <Enter> key.

8. Press the <Enter> key to continue the installation process. (If you need to specify any additional devices to be installed, do it at this time.) Once all devices are specified, press the <Enter> key to continue with the installation.

9. From the Windows XP/2000/2003 Setup screen, press the <Enter> key. The XP/2000/2003 Setup will automatically load all device files and then, continue the Windows XP/2000/2003 installation.

10. After the Windows XP/2000/2003 OS Installation is completed, the system will automatically reboot.

B-2 Installing the Windows XP/2000/2003 OS for Systems without RAID Functions

1. Insert Microsoft's Windows XP/2000/2003 Setup CD in the CD Driver, and the system will start booting up from CD.

2. Continue with the OS installation. The Windows OS Setup screen will display.

3. From the Windows XP/2000/2003 Setup screen, press the <Enter> key. The XP/2000/2003 Setup will automatically load all device files and then continue with the Windows XP/2000/2003 installation.

4. After the Windows XP/2000/2003 OS Installation is completed, the system will automatically reboot.

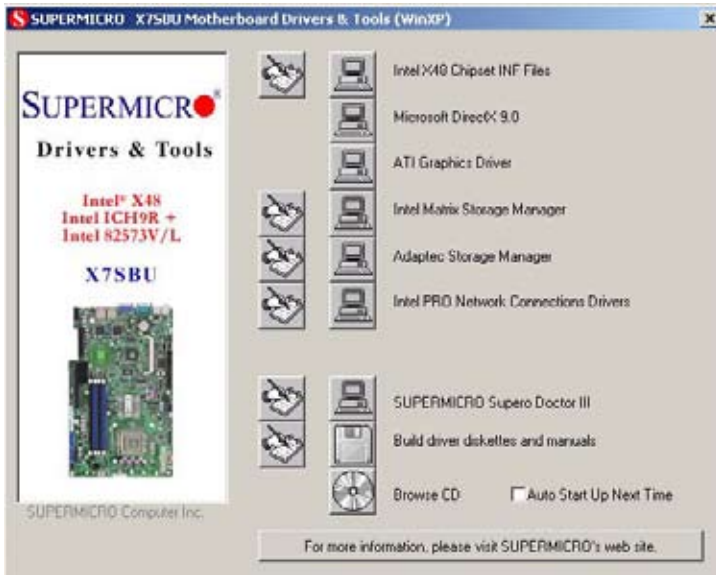
5. Insert the Supermicro Setup CD that came with your motherboard into the CD Drive during system boot, and the main screen will display.

Appendix C

Installing Other Software Programs and Drivers

C-1 Installing Drivers other than the Adaptec Embedded Serial ATA RAID Controller Driver

After you've installed the Windows Operating System, a screen as shown below will appear. You are ready to install software programs and drivers that have not yet been installed. To install these software programs and drivers, click the icons to the right of these items.



Driver/Tool Installation Display Screen

Note: Click the icons showing a hand writing on the paper to view the readme files for each item. Click on a computer icon to the right of an item to install an item (from top to the bottom) one at a time. **After installing each item, you must re-boot the system before proceeding with the next item on the list.** The bottom icon with a CD on it allows you to view the entire contents of the CD.

C-2 Configuring Supero Doctor III

The Supero Doctor III program is a Web-base management tool that supports remote management capability. It includes Remote and Local Management tools. The local management is called the SD III Client. The Supero Doctor III program included on the CDROM that came with your motherboard allows you to monitor the environment and operations of your system. Supero Doctor III displays crucial system information such as CPU temperature, system voltages and fan status. See the Figure below for a display of the Supero Doctor III interface.

Note: 1 The default user name and password are ADMIN.

Note 2: In the Windows OS environment, the Supero Doctor III settings take precedence over the BIOS settings. When first installed, Supero Doctor III adopts the temperature threshold settings previously set in BIOS. Any subsequent changes to these thresholds must be made within Supero Doctor, since the SD III settings override the BIOS settings. For the Windows OS to adopt the BIOS temperature threshold settings, please change the SDIII settings to be the same as those set in BIOS.

Supero Doctor III Interface Display Screen-I (Health Information)

Supero Doctor III Interface Display Screen-II (Remote Control)

Note: SD III Software Revision 1.0 can be downloaded from our website at: ftp://ftp.supermicro.com/utility/Supero_Doctor_III/. You can also download SDIII User's Guide at: http://www.supermicro.com/PRODUCT/Manuals/SDIII/UserGuide.pdf. For Linux, we will still recommend that you use Supero Doctor II.

Notes

(Disclaimer Continued)

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